

Intelligence Bulletin

APRIL 1946



MILITARY INTELLIGENCE DIVISION • WAR DEPARTMENT • WASHINGTON D. C.

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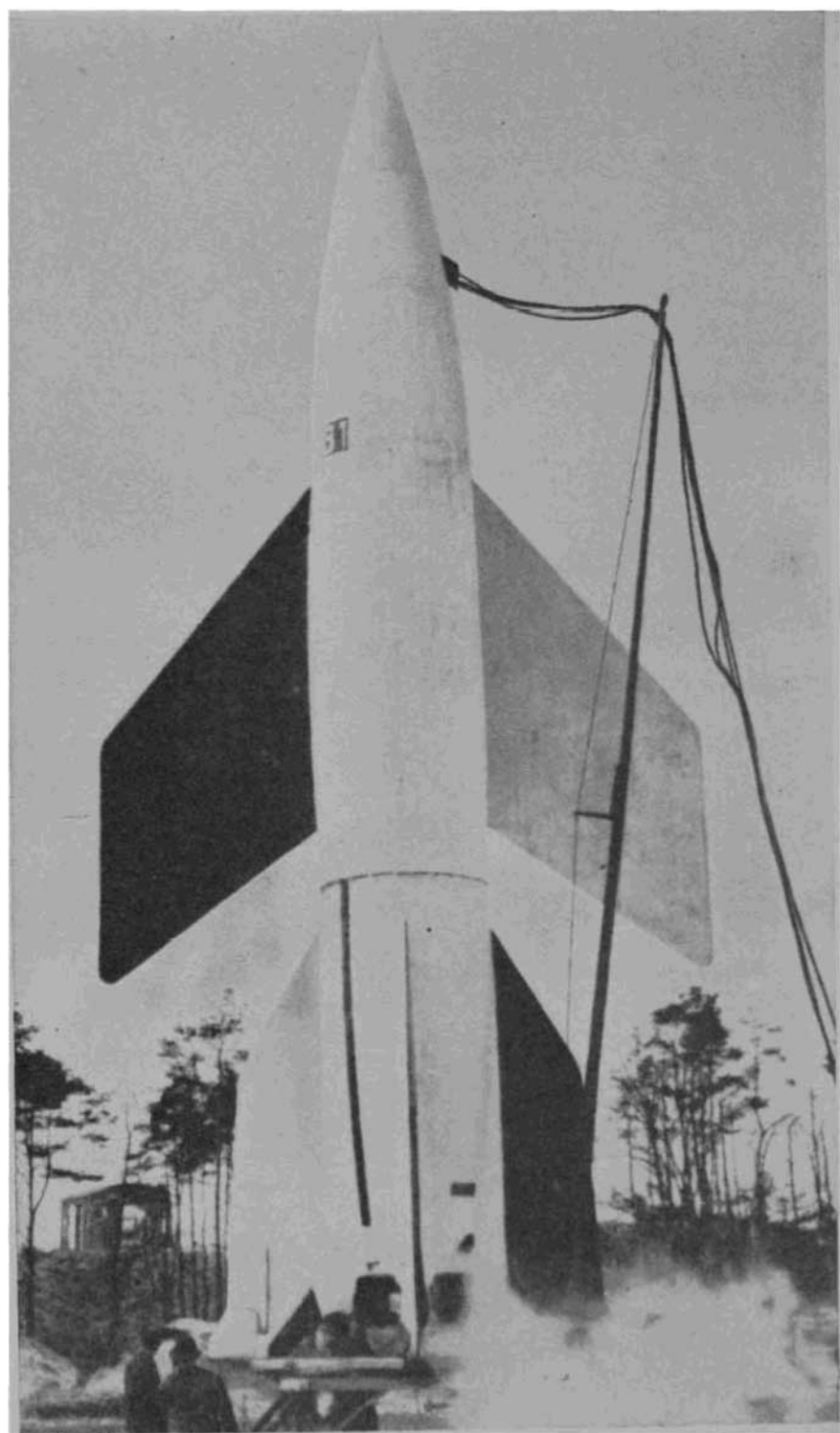
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Cover Illustration: One of the big German war boners was their failure to coordinate their aggressive plans with their development of guided missiles. Had this program, in which the Germans held the lead, been pushed to real fruition, the results would have been incalculable. Guided flak missiles, like the *Rheintochter* model here shown under German test, might have driven Allied planes from the air over Germany. The story of German guided missiles and the light they throw on future weapons of this type begins on page 1.



GUIDED MISSILES . . .

THE WEAPON OF THE FUTURE

Last month, the "Intelligence Bulletin" discussed certain overall aspects of atomic warfare. This month it features guided missiles. To the soldier, the field of guided missiles should be of even greater interest than that of atomic fission, for while atomic fission may not be used in warfare, there is every indication that guided missiles will play a great role in any future conflict.

Whether guided missiles have atomic warheads, or whether they are atomic or otherwise powered, their possibilities appear to be almost incalculable. Present possibilities indicate that they might greatly affect conventional air forces and navies, and vastly alter the complexion and composition of ground forces. In any event, they represent another and marvelous means of warfare—a means which will further complicate the sweepingly broad and decisive technical and tactical relationships that make modern war so difficult an art.

Because the guided missile field is naturally full of highly classified developments, and because the Germans were first in their visionary promotion of guided missiles projects, the guided missiles field is expounded by a story of the high points of German guided missiles development.

← *This is the German A-4 rocket, the furthest development in long-range rocket missiles reached by the Nazis before Germany's collapse. With this winged version of the familiar V-2, the Nazis planned to bomb every major port in Great Britain. Fortunately, the missile never had time to get beyond the test stage. As pictured here, it is being serviced for a test launching at a German rocket development center.*

Late in the war with Germany, newspapers in the United States reported that Germany might launch a rocket attack on New York. This story was discounted by many as alarmist and fantastic. But there is evidence that the Germans had considered just such an attack. For some time prior to the end of the war, the *Wehrmacht* actually had on the drawing boards a weapon which, fired from German-held soil, could reach across the Atlantic.

It is a shock to realize that this weapon was originally scheduled for operational use as early as February 1946.

That such a weapon was actually under development in the German *Heereswaffenamt* as a safe and sane project illustrates perhaps better than anything else the importance and potentialities of a coming new class of weapon—the guided missile, as the giant German rocket should be technically termed.



The Germans, like the Japs, tried to introduce a human guiding mechanism for one version of their V-1. Like the Jap "Baka," this was intended for use as an anti-invasion fleet weapon. Unlike the "Baka," it was never used.

Essentially, a guided missile is just what the name implies. It is a "missile" or "object" that is intended to make a single journey to a target and is not expected to return, although some types may be equipped with devices enabling them to return if the target should suddenly move or become unassailable. Secondly, the term "guided" means that the missile is equipped with some kind of controlling or guiding agent. This agent may be carried within the missile (homing devices activated by the target itself, automatic pilots set prior to launching, or a human pilot—as in the Jap *Baka* bomb), or they may be external, exerting control by wire from a parent plane or by a radar-radio system.

Properly speaking, guided missiles may travel in any medium. They may, like a torpedo, move on or under the water's surface. They may travel through the air, or course through space beyond the earth's atmosphere. Since water offers great resistance to the passage of a guided missile, the usefulness of the first major guided missile, the naval torpedo has been limited.

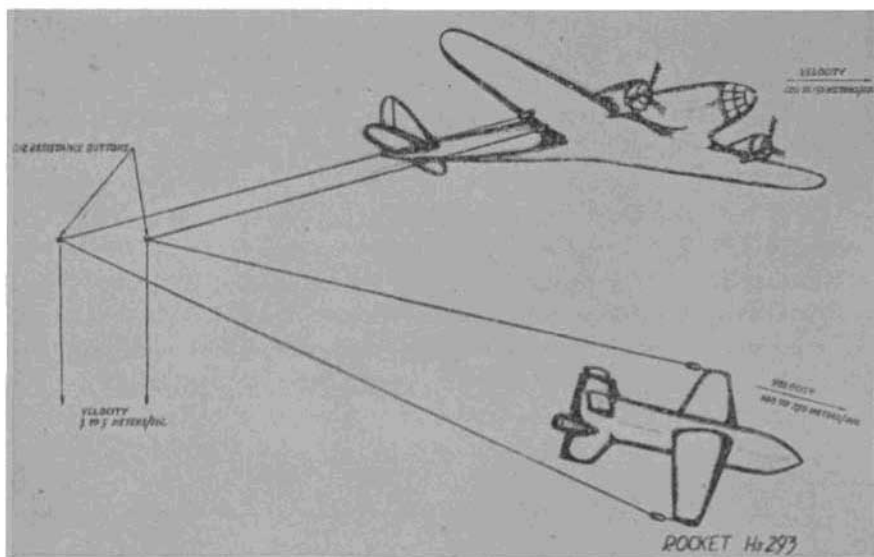
Air is less inhibiting, while the thin air nearer outer space, and finally space itself, offers progressively less friction-creating media for guided missile travel. Lack of friction means the attainment of greater speeds and greater ranges for guided missiles. Greater speeds also mean that the effectiveness of countermeasures is reduced in proportion to the speed increase. Therefore, it has been the above-surface guided missiles which have given recent promise of effecting great changes in modern warfare.

So far, the most favored propulsion methods for above-surface guided missiles tend to be those first exploited by Germany. One type is that used in the famous V-1: jet propulsion. In this type, oxygen for the combustion process providing the propulsive force is obtained from surrounding air. The second type of propulsion is that of the rocket in which the oxygen is contained within the rocket fuel. The rocket principle is important to grasp, for many people have not yet caught up with Isaac Newton. They don't realize that a bazooka or a V-2 rocket gains its thrust, not from pushing against the air, but by being blown forward by the energy of the explosion train (accelerated combustion) of its own fuel. The consequences are significant: While a jet-propelled missile must stay within the limits of the atmosphere so that it can draw in oxygen for fuel combustion, the rocket can travel below the surface of the water, in the air, and in space. Right now, the rocket is the only weapon of space warfare that is in sight.

Though guided missiles traveling above the earth's surface all tend to attain extremely high speeds, not all of them necessarily need to be perfectly streamlined. If part or all of the flight path is to be made within the atmosphere, it may be convenient to provide wings. The wings' purpose may not only be to increase the range by reducing the glide angle, they may actually furnish the lift to support the missile, as in the V-1.

Control surfaces may also be provided, varying in size with the amount of control it is desired to exert. Wings, control surfaces, and other exterior features all hamper a missile's speed. Winged missiles can nevertheless attain fantastic velocities, so that by and large the science of guided missiles must pass on from the field of aerodynamics into that of ballistics. While plane makers today are talking of attaining the speed of sound (approximately 1,000 feet per second), the "common" or "garden" variety of guided missile may easily be supersonic—may travel at the rate of speed of a rifle bullet or artillery projectile. German guided missiles like the V-2 have hit velocities which were above those of the most powerful German 88-mm AP ammunition.

Comparison of guided missiles with artillery and aircraft is particularly



The German Army got the idea of using guided missiles back in 1918, when the use of wire-control was conceived as a means of increasing bombing accuracy. This diagram shows a German World War II wire-controlled bomb.

apt. Thinking in the rarified atmosphere of higher theory, the plausible thesis has been maintained that the guided missile is merely a perfection of artillery. By this thesis, an artillery piece, seeking to hit a target on the earth's surface from another point thereon, can exert no control over its projectile after the projectile has left the gun tube.

The aircraft represents an extension of the capabilities of the artillery piece in certain respects, especially as regards long-range work. The aircraft actually picks up the projectile (bomb) or even the gun itself and carries it fairly close to the target. In so doing, the aircraft exerts control over the projectile (bomb) for a far greater time than would a gun firing a projectile over the trajectory covered by the flight of the plane from base to target.

The guided missiles represent the greatest advance, in that control may be exercised from the moment of launching up to the moment of impact, without the need of an aircraft ferry. Like an artillery position, a launching site for such a guided missile can be protected and concealed, and can be made mobile to assist in securing protection. In contrast, the aircraft of today must not only secure its extensive base, but must expose itself and its crew members in the teeth of enemy defenses, in order to get off a conventional, free-dropping bomb. It also has to get itself back to its base. The ground-launched guided missile need have no such shortcomings. Its main defect, compared to the conventional artillery projectile, is the necessity of its carrying along the dead weight of its fuel and "motor" system—features which the artillery projectile leaves behind in its gun.

Guided missiles traveling above the earth's surface have more uses than just "ersatz" for artillery and planes in normal long and superlong range bombardment. When launched from planes, they may be used to improve the accuracy of bombing, and especially to enable aircraft to remain outside the main concentration of antiaircraft and still get its missiles on the target. They can be used to improve the efficiency with which planes may shoot down each other. Their usefulness as a flak weapon is tremendous. They are obviously useful in short-range firing on the ground and on the sea. For the sake of convenience, it is by such types of use that guided missiles obtain their classification. U. S. armed forces are therefore accustomed to class guided missiles in four groups: surface-to-surface, surface-to-air, air-to-surface, and air-to-air missiles.

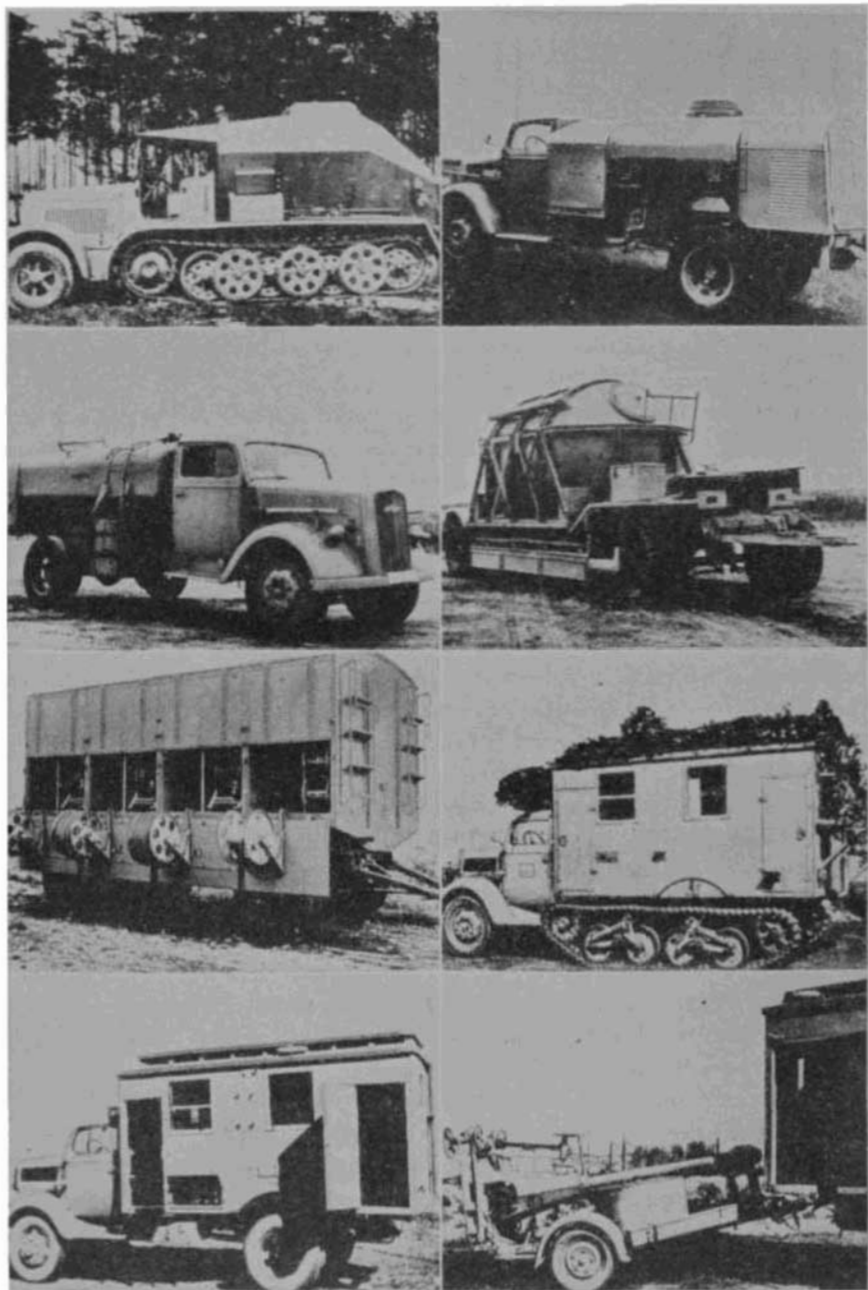
A completely new field, guided missiles traveling above the earth's surface only became practical with the advent of advanced scientific techniques. Back in 1918, the Germans got an idea of their importance, and were in on the ground floor with a plan to use a wire-controlled bomb in their army air force. Since they were always "shooting an angle" to get the better of their neighbors, they were willing, in the postwar period, to undertake the tremendous expense of basic research on guided missiles.

The really big program was initiated by some young civilian technical scholars. Inspired by a futuristic book on rockets by a German professor, they banded together and began experiments in 1929. Their high point was the development of a rocket which successfully carried the mail over the Alps into Austria.

Lacking funds for proper advanced experimentation, they sold their idea to the German Army, which took up them and their work in 1932. The Army had, meanwhile, been working on rocket fuels since 1930, and hence was in a position to push the project when Hitler's rise to power brought unlimited funds to German war preparations. The year 1936 saw the construction of the huge experimental station and laboratory at desolate Peenemünde on the Baltic. Operations of that station in the very first year were reported to have been financed by an appropriation of 300,000,000 gold marks (some \$100,000,000).

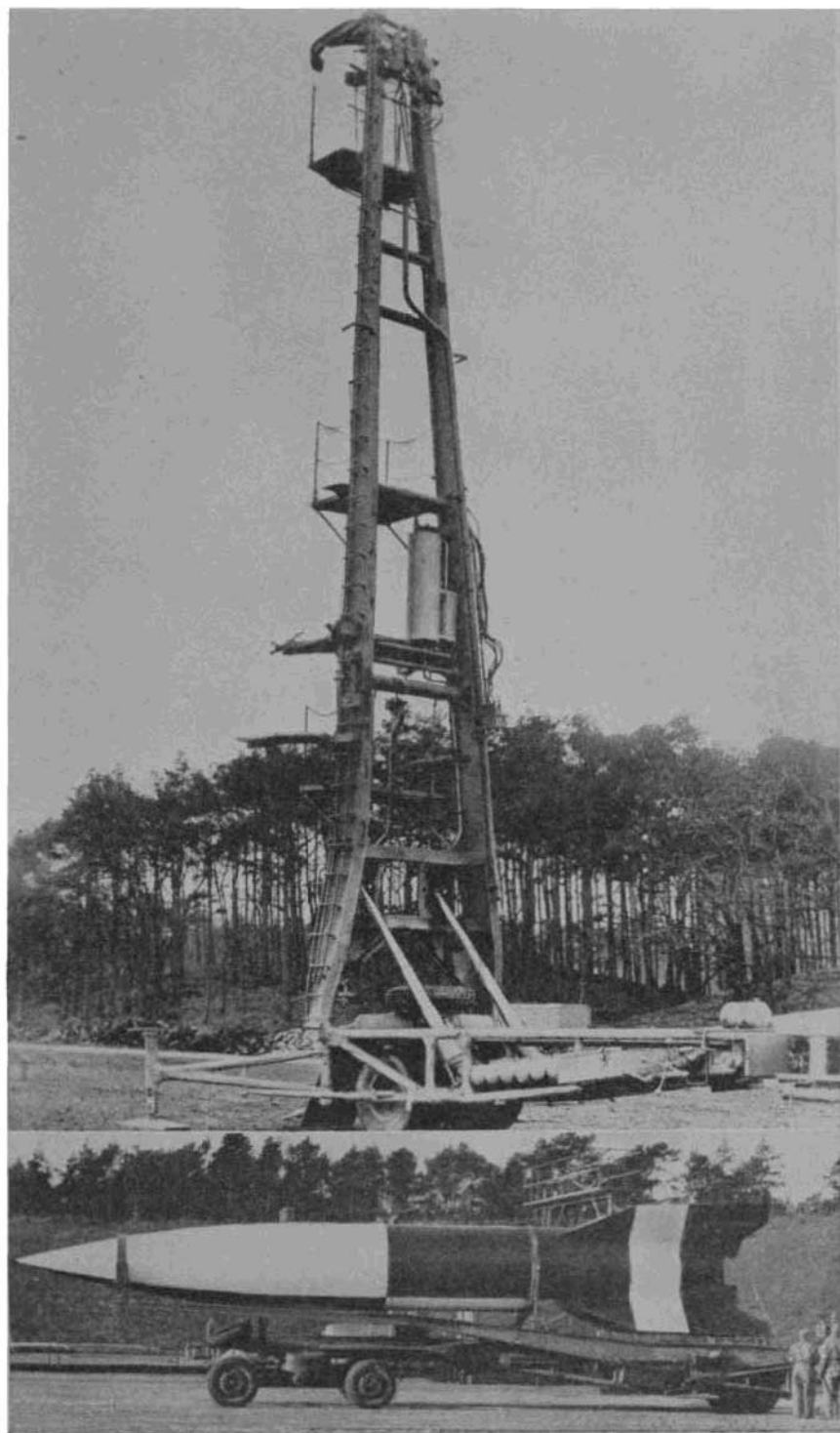
Peenemünde remained the big center for the guided missiles business right up until the end of the war, but Germany was dotted with supersonic wind tunnels, some having wind velocities several times the speed of sound, not to mention research and experimental agencies concerned with the development of theory, technique, and the actual test of models. A large portion of Germany's scientists were kept busy on guided missile work, and, if anything, the Germans spent too much time assembling basic research—that is, if the German High Command were taking into account the deadlines which Hitler was setting for his aggressions.

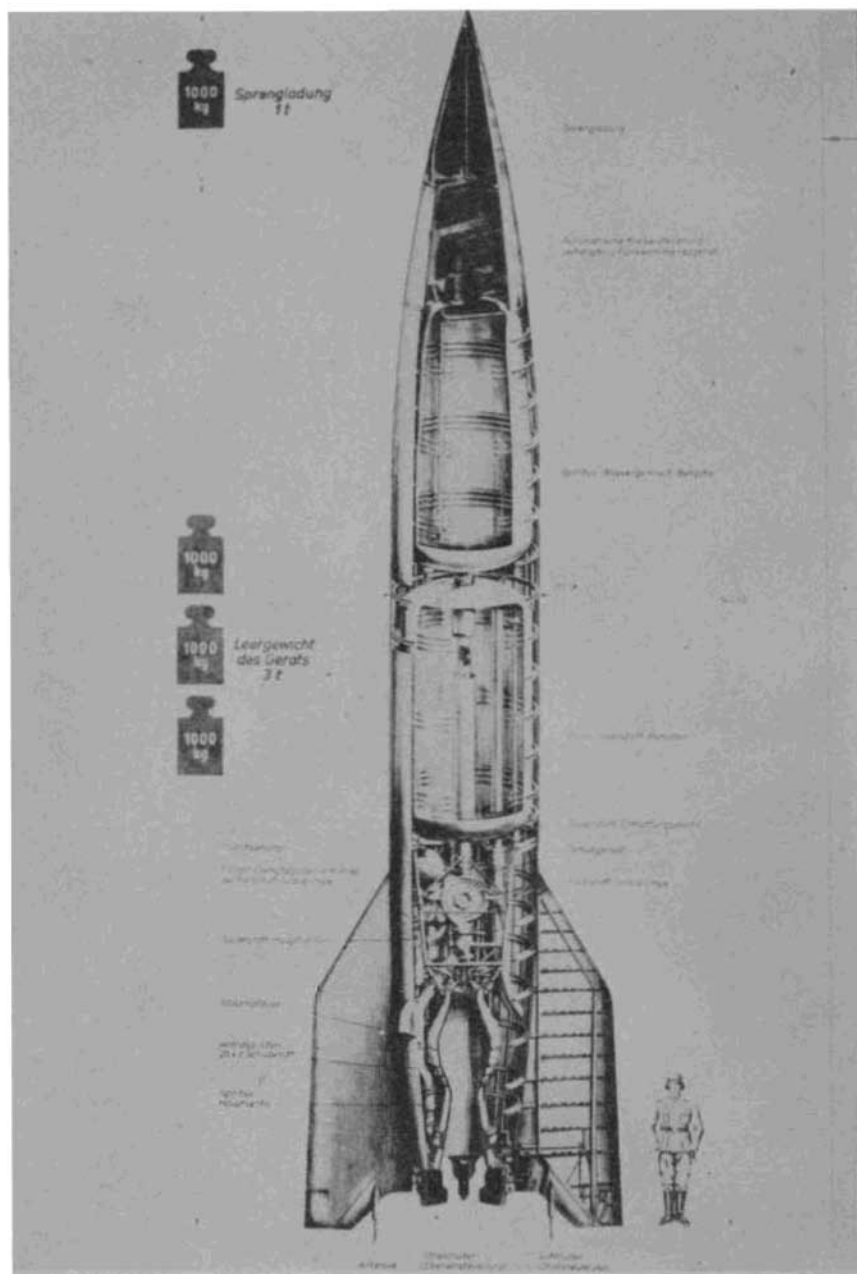
The result was that although the German outlay brought them the V-2 (which as a surface-to-surface rocket was the main interest of the German Army), practical difficulties and personality clashes kept even that weapon



After carrying the V-2 to its launching site, the trailer shown at the bottom of the opposite page raised the rocket to vertical for servicing and launching (opposite page, top, shows raised trailer without rocket).

Once vertical, the V-2 was lowered onto a smaller trailer stand on jacks, then serviced by 30 vehicles, like those above.

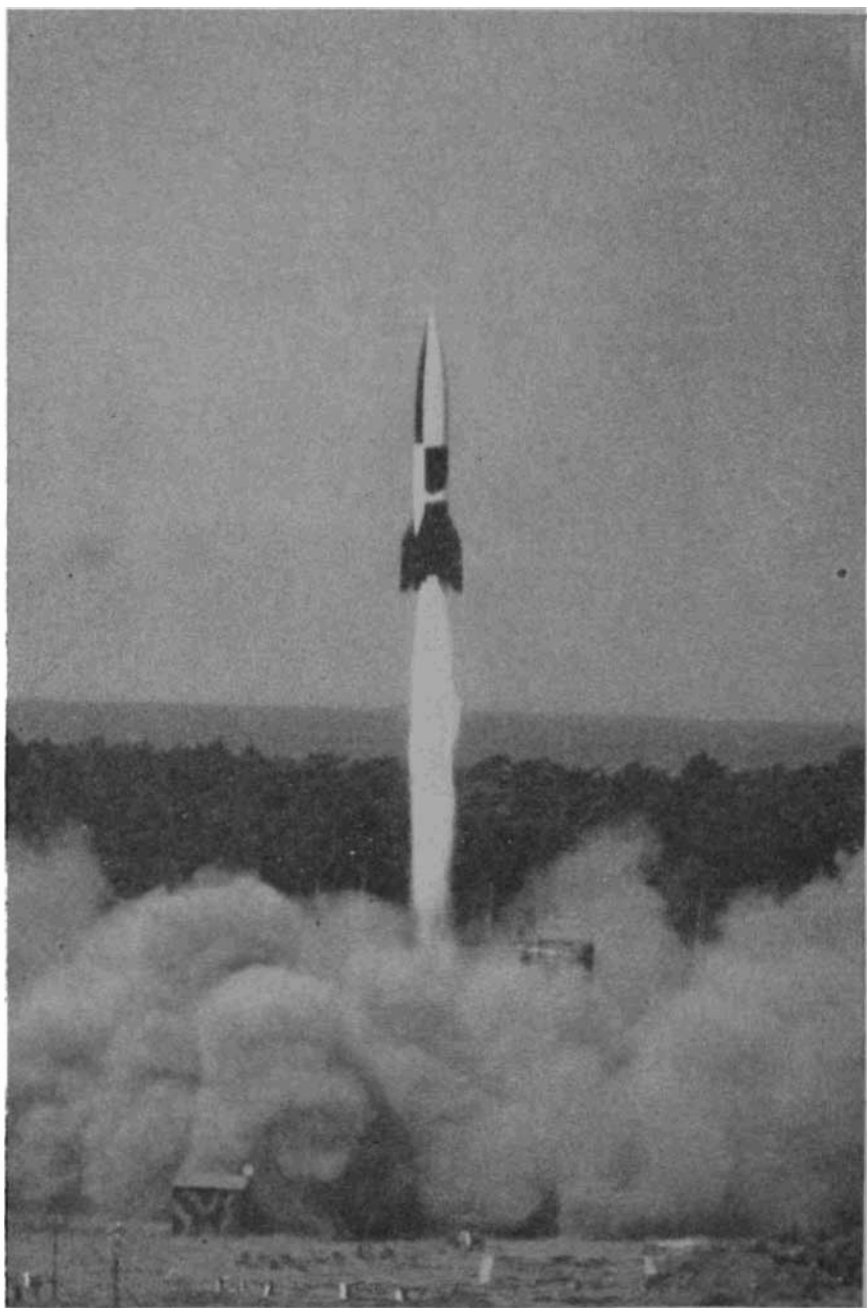




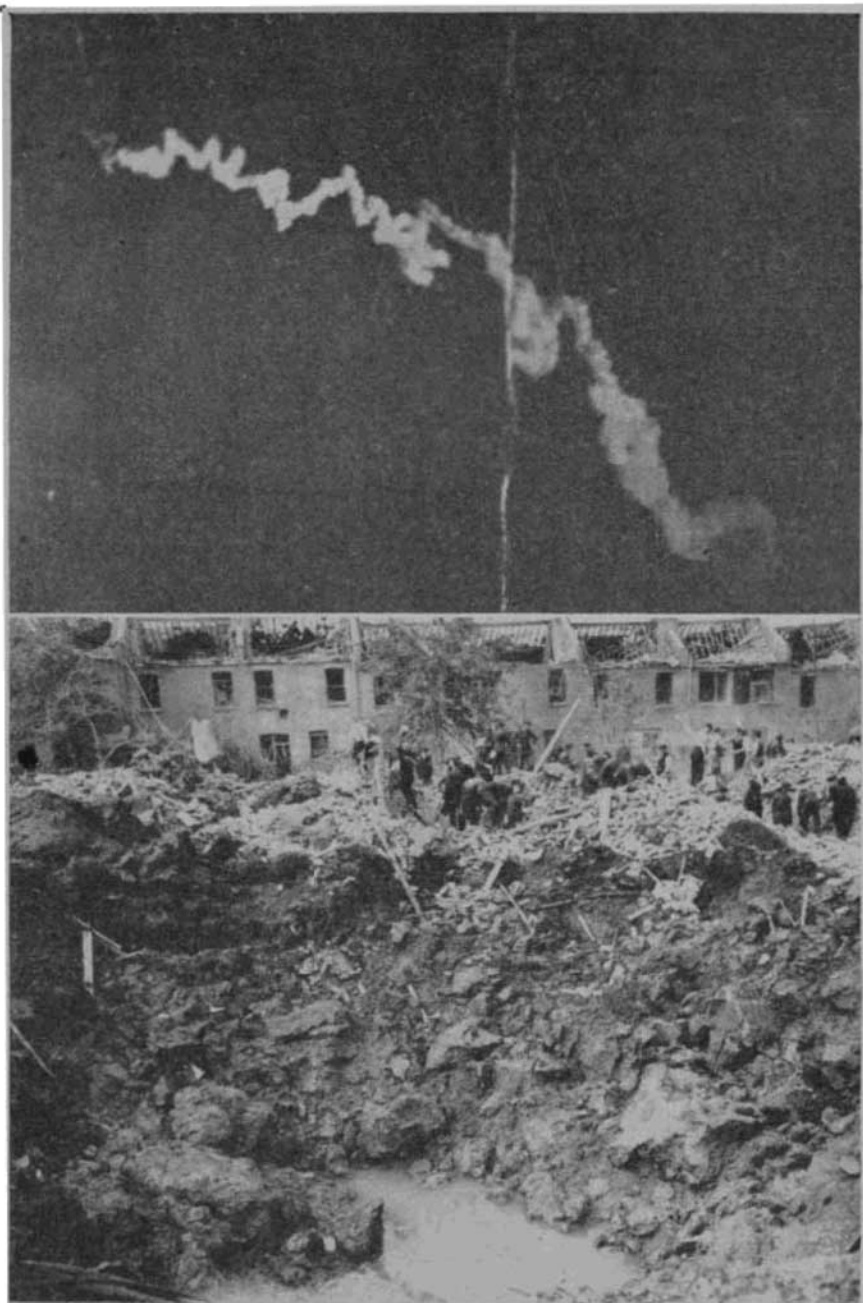
An official German cross-section of the V-2 shows (top to bottom): warhead with 1 metric ton of explosives (2,205 pounds), control chamber, alcohol tank, liquid oxygen tank, turbine, and combustion chamber. The "Leergewicht" is the empty weight of the rocket, given as 3 metric tons.



A significant feature of a V-2-type guided missile is the simplicity of its launching site. In respect to mobility and use of a rapidly-prepared and suitably concealed position, these missiles resemble field artillery.



The V-2 is fired. Its initial rise is majestic and slow, but accompanied by considerable blast and dust clouds. This view shows a V-2 under test at the German Baltic guided missiles experimental station of Peenemünde.



While V-2 paths show a wavy vapor trail (top), this rocket's supersonic speed rules out audible warning, its approach being heard after its explosion. The V-2 thrusts into the earth on impact, reducing lateral blast.

from extensive operational use until 1944, although it was first used against Leningrad in 1943. That this delay was going to ensue became apparent to the Germans after the war had started. Beginning in June 1942, they therefore rushed to get out a missile which could be produced easily and within a reasonable length of time—and also be effective. The weapon so rushed was the V-1.

Too little prewar preoccupation with the practical applications of guided missiles had a really decisive effect in the air war. Preliminary victory in the air and a belief in the *Luftwaffe's* ability to defend *Festung Europa* were added factors, in that a slackening off in the development of flak (ground-to-air) and aircraft (air-to-air) guided missiles resulted after the war got under way. When the U. S. 8th Air Force bared its fangs in 1943 and showed that effective daylight bombardment in force was more than a possibility, it was too late for the Germans to translate their guided missile programs into a practical weapon against strategic air penetration. But it was only too late by a hair.

It is also fortunate that these researchers did not produce operational air-to-ground missiles sooner than 1943. The initial ones that did get into service in the Mediterranean were vicious against shipping; three later-type armor-piercing missiles easily dispatched the new Italian battleship *Roma*. If they had been ready when Britain's back was to the wall in 1940-41, the task of the Allies would have been incomparably more difficult. By trying initially for a V-2 long-range rocket, and trying to get it to be extremely accurate, the Germans gave away a great part of their initial advantage in guided missiles development.

German guided missiles may not all have been operational, and those that were may not really have been perfected. But those that did exist still furnish excellent examples of the various types of guided missiles which are capable of being developed.

THE V-2: ROCKET PROPULSION

The surface-to-surface missile which the Germans had originally planned as their dream weapon was what we now know as the V-2. Since the Germans in the 1930's were intending to do all the pushing around themselves, they hadn't originally planned to call the rocket a "V" for *Vergeltungs* (retaliation) weapon, hence the *Heereswaffenamt* simply called their pet big rocket the A-4.

A true rocket designed for long range, the A-4 is stabilized by means of gyroscopes and fins, and weighs approximately 13.6 tons at launching. About 9 tons of this weight consists of the fuel load of liquid oxygen and alcohol. Because of stabilization difficulties while the rocket picks up velocity, it is launched vertically. The fuel, which is fed through a turbine into the combustion chamber, develops a propellant thrust of about 30 tons, lasting about 55 seconds. In that time, the thrust accelerates the missile

to a speed of about 1 mile a second (3,600 miles per hour, or faster than a rifle bullet). After the missile has a good start, the control surfaces at the ends of the fins take over and cant the rocket to an angle of 45 degrees. The A-4 then assumes a curved trajectory with a maximum height of about 60 miles. Thanks to the great height it attains during its flight, air resistance and friction is held to a minimum, thus permitting the attainment of great range.

When the A-4 returns to earth, it is dropping at a 45-degree angle. This steep angle, combined with its speed, makes it the more difficult to deal with. However, its re-entry into the layers of heavier air causes great skin friction and consequent heating. These factors caused the Germans considerable trouble, and often resulted in air bursts too high to effect any damage whatsoever. If the danger of breakup or airburst is overcome, a V-2 can hit the earth at an optimum range of about 200 miles from the launching point.

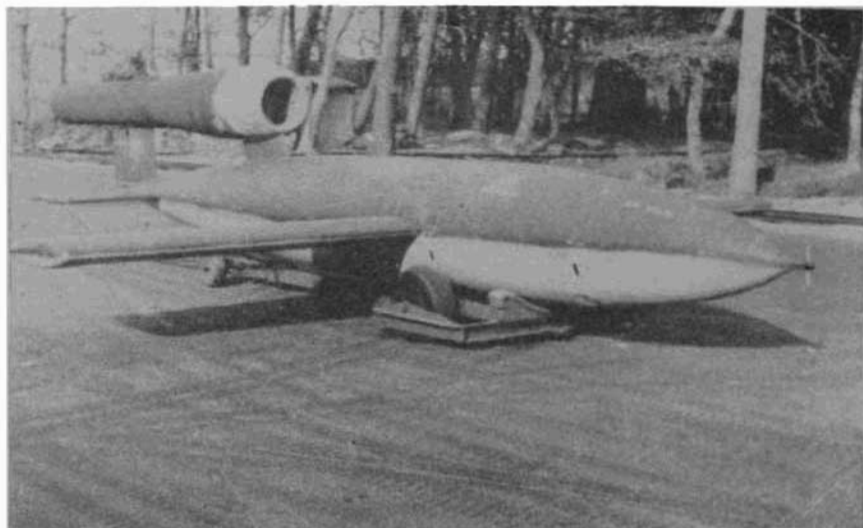
The V-2 represented a terrific effort, production and otherwise, just to deliver a 1-ton warhead. In view of this fact, many have considered that the Germans entertained the idea of using some other explosive than the high explosive actually fitted. While the Nazis would no doubt have jumped at a chance to install a practical atomic warhead, there appears to be no evidence that it was on the books. The Germans' apparent intent was to compensate for expense of production by providing for a degree of accuracy that proved to be unattainable.

The important thing to remember about the A-4 is that the Germans did not consider it a perfected weapon. Nevertheless, this 200-mile missile was in mass production at the end of the war. The German Army had regular units to man A-4 emplacements, with intricately worked-out special equipment, and with a complete SOP. Buck Rogers as it may appear as a weapon, the Germans had it down to the point where it was fired strictly by the numbers.

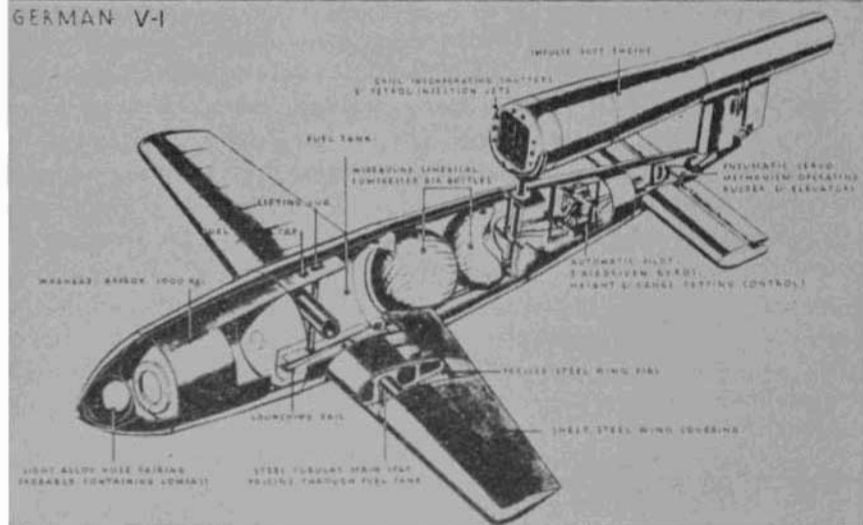
THE V-1: JET PROPULSION

The first of the long-range guided missiles to make its appearance was the V-1, which the Germans termed the *FEG-76*. First tested in December 1942, it was not used operationally until June 1944. It would have appeared considerably sooner, had not the entire Peenemünde establishment come in for considerable Allied air attention. Thanks to severe RAF attacks in 1943, the whole German guided missiles program was set back some 6 months, and that included the V-1.

The *FEG-76*, better known as the V-1 (Retribution weapon 1), is a jet-propelled guided missile of the internally controlled type. That is, its guiding mechanism is preset before launching. No further control is exercised by radio, wire, or homing device. An automatic pilot is used to control direction and altitude, while an air-log in the nose registers the



GERMAN V-1



The V-1, typifying jet-propelled guided missiles, was rushed when the favored V-2's development failed to promise early operational success. Easy and cheap to build, the V-1 lacked the V-2's effective supersonic speed. Shown above is the V-1 complete (top) and a cross-section (bottom).

distance the missile travels. When the missile has traveled to a predetermined point, the guiding mechanism sends it into a steep dive and arms the fuzes on the warhead.

The Germans also had the idea of a piloted V-1, like the *Baka*. Supposed to be especially efficacious against an invasion fleet, it never got into use for reasons which the reader can imagine.

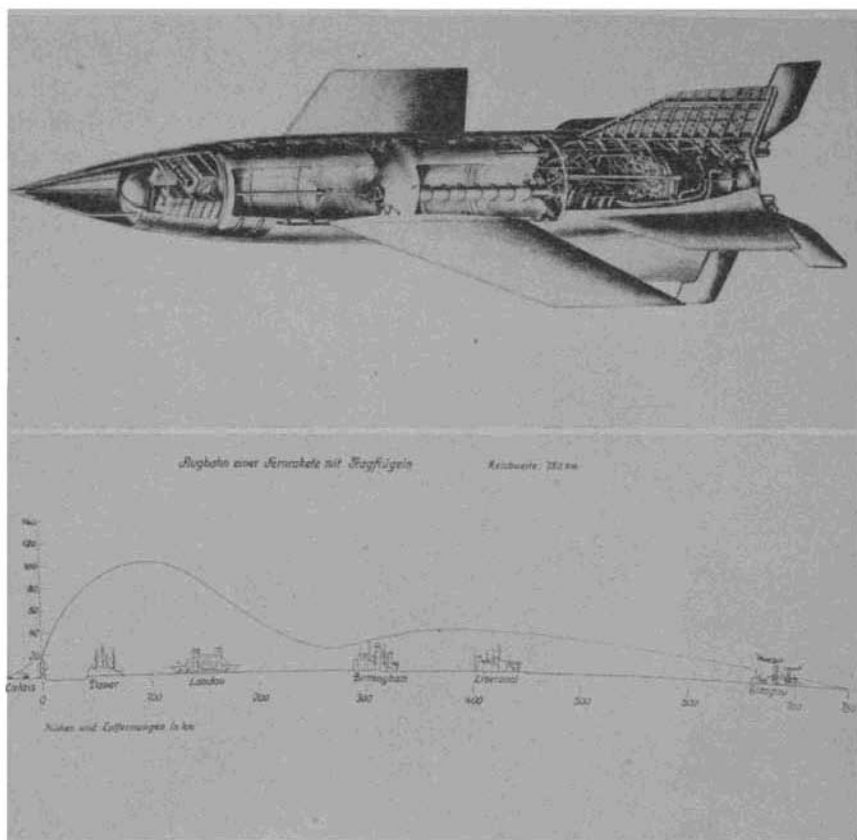
Launched from either a launching platform or from aircraft, the V-1 type is powered by a simple power unit. The propulsion unit is a simple

device designed to capture the air at the intake, mix in some fuel, and ignite it. The resulting explosion closes the intake port and creates a backward thrust through the open end of the engine tube, and the resulting vacuum opens the front valve for the next intake of air. This cycle creates the characteristic popping noise, known as the impulsive or pulsating flow duct, or the "aero-pulse."

Compressed air from bottles carried in the V-1 forces a low-grade gas through jets into the air stream at the valves, and a high-tension spark ignites the mixture. Once launched, the cycle continues without the benefit



V-1's were launched from either fixed sites, semi-mobile sites, or "He 111 K" bombers. The top picture shows a Peenemünde ramp, the bottom picture a V-1 under a Heinkel's left wing. U. S. technicians built ground sites that were far more efficient and mobile than any designed by the Germans.



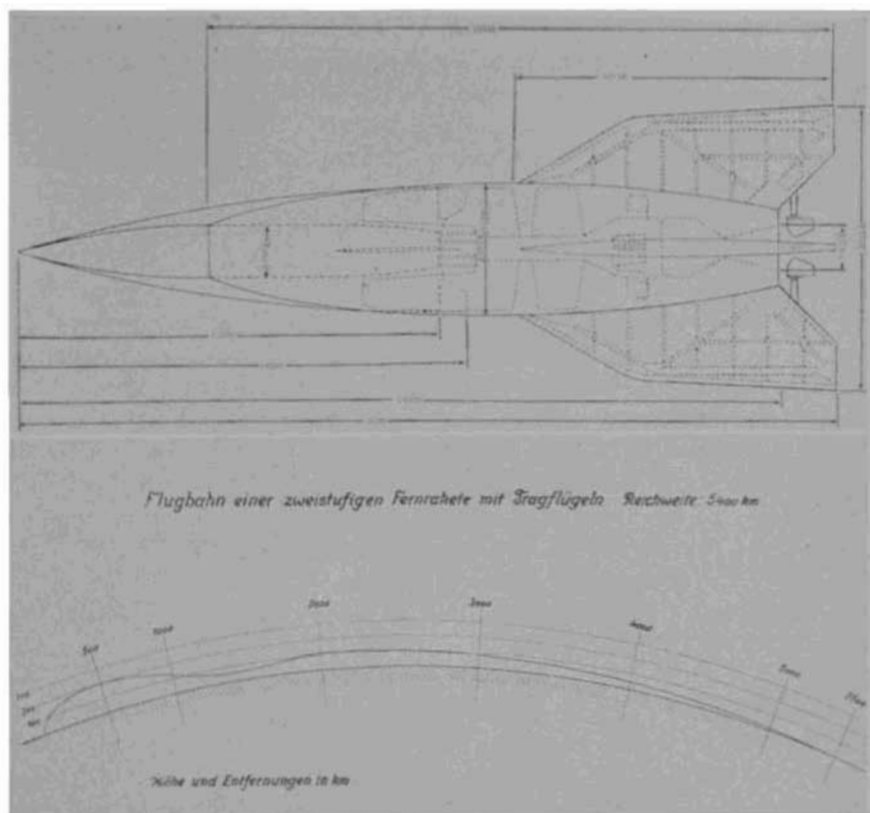
Modified from the V-2 (A-4) was the winged version called the A-4b (see also frontispiece). As the German official trajectory chart shows, the wings may have reduced speed, but prolonged the range by glide. Top view is cross-section. Chart figures are in kilometers (1 km=0.62 mi). Calais is shown as the launching site.

of spark, since the new intake of fuel and air is ignited by the residue of hot gases remaining from the previous cycle. The whole propelling system is so simple that it allows rapid production.

The V-1 has a range of about 150 miles, and carries a warhead of 2,000 pounds of high explosive. The over-all weight at launching is 4,860 pounds, 836 pounds of which is fuel. It is approximately 25½ feet long, with a wing spread of 17½ feet.

The V-1's principal defect was its low speed for a guided missile. This made it susceptible to countermeasures, particularly by antiaircraft artillery firing VT fuzed projectiles.

While the V-1 and V-2 were operational, German scientists have emphasized the point that these developments must not be regarded as examples of any but the first tentative steps in the ground-to-ground guided missiles business. Illustrative of this fact are the plans which the Germans had drawn up for developments of the V-2. For instance, just by adding



The ultimate of the V-2-type rocket was the A-9/A-10 combination, the former breaking loose from the latter in flight, after the A-10 had flown its full course. A project that never reached the test stage, this scheme provided for a range that would have brought the A-9 to America, as the trajectory chart indicates.

wings on the V-2, this type of missile could obtain a great increase in range. As the missile fell to earth, it would assume a flatter glide angle than its normal fall and stretch out its flight to approximately 350 miles. This type of rocket the Germans called the A-4B; they actually built some for test. With it, they counted on being able to hit any port in the British Isles.

Only on the drawing boards were more fantastic weapons yet. The most interesting was the A-9/A-10 combination. Outgrowths of the V-2, they were the rocket group capable of being fired across the Atlantic. The A-10 was the main and initial rocket, carrying 125,000 pounds of fuel. Once it had taken off, V-2 like, and made most of a round trip into the outer layers of air, it would fall apart. The nose would then turn out to be a V-2-size winged rocket, which would take off on a flattened trajectory, ignite its propellant, and travel under its own power to its target on a course roughly parallel to the curvature of the earth. The A-9 would have lacked the

velocity of an ordinary V-2 because of its flat trajectory. Unless the Germans had worked out a good guiding system, its accuracy would have been very poor. It would have represented a great deal of effort just to get a V-2 warhead to the U. S. side of the Atlantic, but the fact remains that, in 1939-1945, the Germans not only thought of doing it, but were planning to do so. And 1946 was the date they had scheduled for operations.

AIR-TO-SURFACE MISSILES

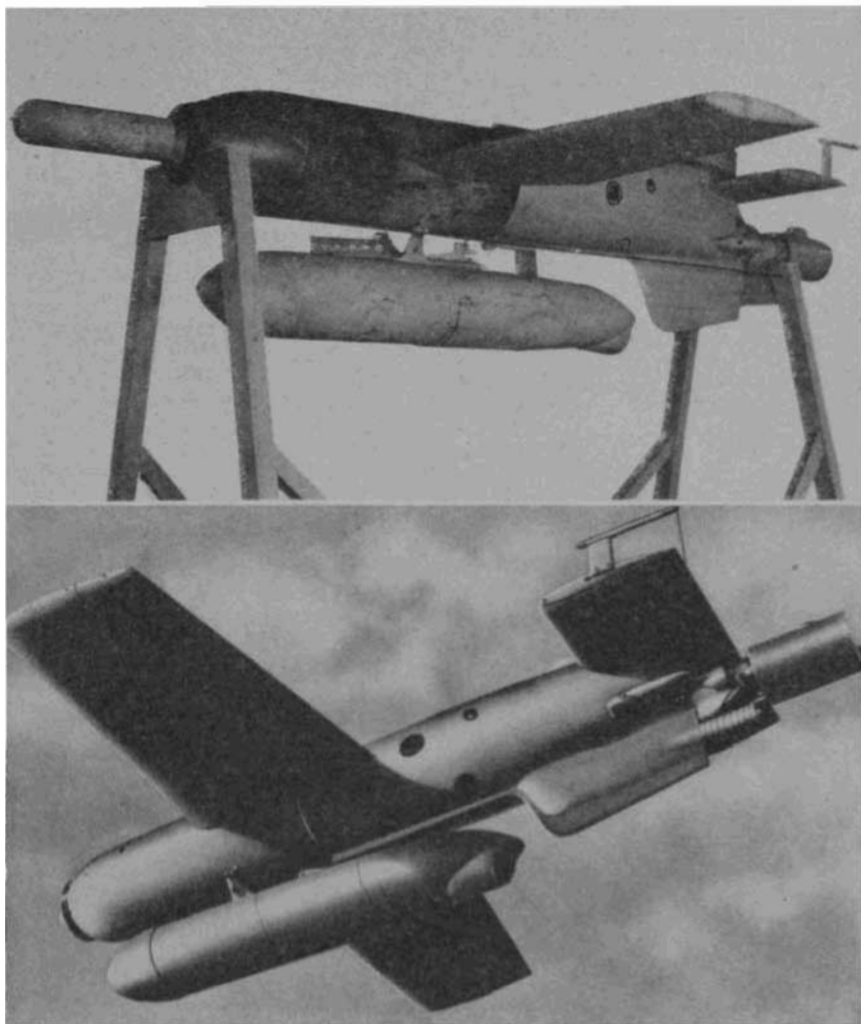
Of obvious immediate practicality are the air-to-surface missiles. Most soldiers and certainly fliers are aware of the hail of flak that a well-guarded convoy or fleet at sea is capable of releasing. They also know what defending fighters can do in close cooperation with that flak defense. However, if the attacking aircraft can stay well away from the defenses, and yet guide their bomb to its target in spite of the dodging of ships after the bomb is released, both active defense and evasive action will be largely cancelled. To take advantage of such a possibility the Germans put into service the first controlled bombs—the *FX-1400* and the *Hs 293*. That this type of guided missile should be the first one in service is logical, for a wire-controlled bomb was the German Army's first guided missile idea back in 1918.

The German high-explosive bomb, *Hs 293*, is a radio-controlled, rocket-propelled glider, designed primarily for use against merchant ships and naval craft. It is usually released from the parent plane at an altitude of 3,000 to 5,000 feet, and at a distance from the target of from 3 to 5 miles. It is not released directly at the target, but on a parallel course, and is directed by radio from the parent plane. Upon release, the rocket propulsion unit automatically goes into action, developing a thrust of about 1,500 pounds for a period of 10 to 15 seconds. This accelerates the missile to a maximum speed of 375 miles per hour, but later drops to about 250 miles per hour.

Including the warhead of 1,300 pounds of high explosive, the *Hs 293* weighs one ton. It is approximately 12 feet long, and has a wing span of 10 feet. The tail is provided with flares and an electric lamp with a "tracer" light to aid control from the plane. Experimental models have been equipped with proximity fuzes. The *Hs 293* was used quite successfully in the Mediterranean area, and appears to have been first used in an attack on British antisubmarine vessels off Spain in September 1945.

Later models which were perfected, although they never quite reached the operational stage, were designed to be both radio and wire controlled in the event that Allied jamming should interfere with normal radio control. Another modification was a missile incorporating a television transmitter which sent a target picture from the missile to the bombardier.

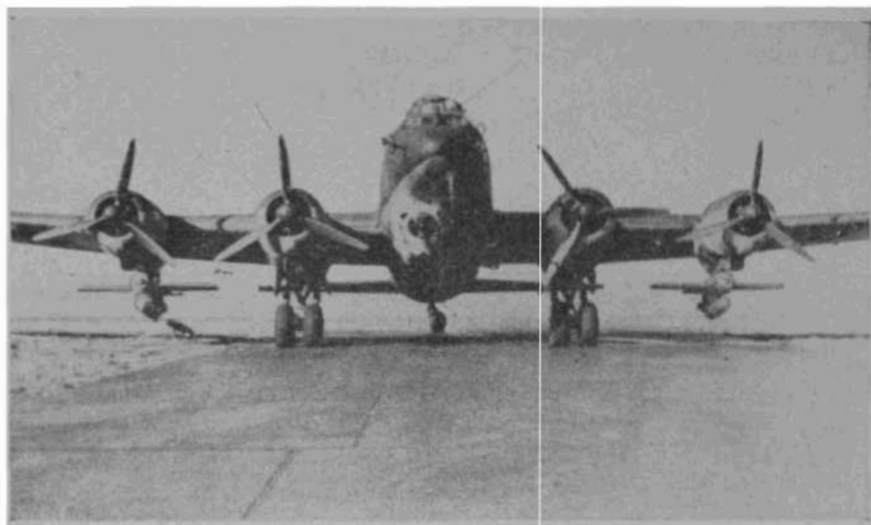
Though the *Hs* series were effective, they were high-explosive bombs. Naval craft are armored and, at any rate, better protected against high-explosive blast than merchantmen. Hence there was needed a guided



The "Buck Rogers" device at the top represents a most important weapon for use against shipping, and was used against Allied craft in the Mediterranean. It is the radio-controlled "Hs 293" bomb; shown below is a later modification. As shown on page 4, these could be fitted with wire control.

missile that would pierce armor—and which would also have the necessary accuracy to score a direct hit on naval vessels. The Germans answered this need with the *FX-1400* radio-controlled bomb. This bomb appears to have been first used in July 1943 in Sicilian waters.

Smaller than the *Hs 293*, the *FX-1400* makes it possible to mount two or three missiles on a single bomber. The *FX-1400* is also capable of being carried in the standard bomb rack used on at least six types of German planes. Just under 11 feet long, it weighs 3,080 pounds. It has two pairs of short metal wings, and an oval-shaped tail surface. A gyroscope and



This German photo shows a four-engine Focke-Wulf bomber carrying two of a late model Henschel (Hs) radio-controlled, rocket-powered bomb. The way the Germans worked control after release shows that there was more to guided bombing than just launching the bomb and steering it to the target. Trained personnel with special instruments (below) had to track the bomb, while the plane had to execute a definite flight problem in relation to the path of the missile and course of target.



radio-control circuit steady the missile and control its course sufficiently to permit a theoretical direct hit within 20 feet from an altitude of 20,000 feet. The *FX-1400* develops a speed of 630 miles per hour. Later, a wire control was developed to counteract jamming.

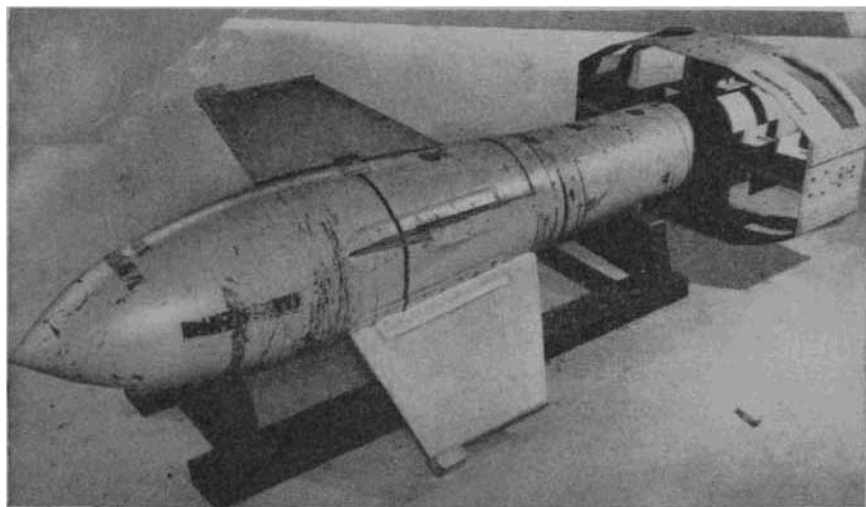
Later models, which the Germans were unable to get into the operational stage, reached the supersonic speed of 900 miles per hour, and could be dropped from an altitude of 40,000 feet. The new design made use of a spin-stabilization in which the whole missile rotated at the rate of about 60 rounds per minute. A new radio control was developed for control while spinning.

The Italian battleship, *Roma*, was sunk with an *FX-1400* which apparently hit the upper deck abreast of B turret, causing first a small explosion, and then a magazine explosion. This bomb is believed to have penetrated 8 inches of armor.

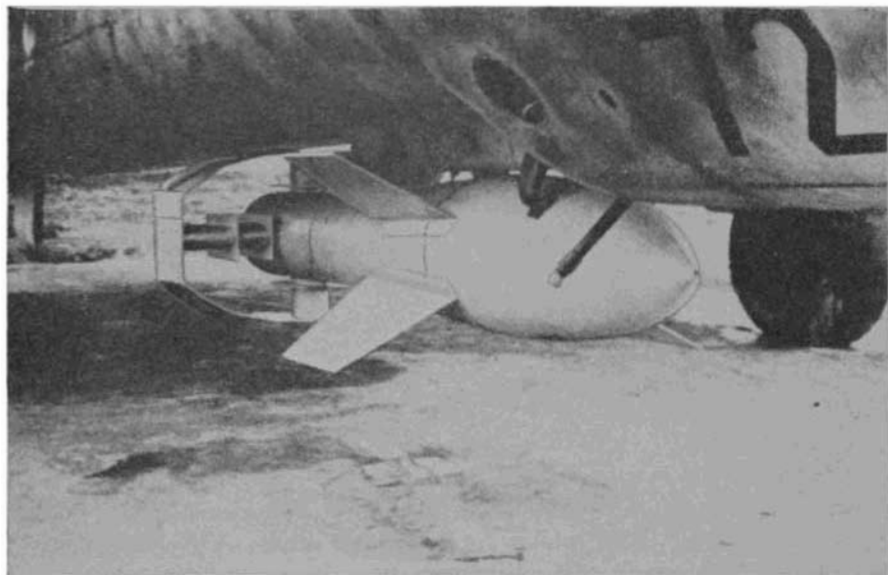
The advantages of air-to-surface guided missiles in naval warfare, and in counteramphibious operations, is obvious from the characteristics of the German missiles. With guided features overcoming evasive action, with the plane able to remain beyond the fleet's guns, and with the missile arriving at supersonic speeds at which antiaircraft fire is extremely difficult, the problem of naval defense against air attack is tremendously complicated.

SURFACE-TO-AIR MISSILES

Perhaps of greatest interest to both airmen and ground soldiers are the surface-to-air, or flak-type guided missiles. To the Germans, they were a most vital field. Concentrated German flak defense of the conventional



The "Fritz X," or "FX-1400," is believed to have been the first operational guided missile. An armor-piercing, radio-controlled bomb for use against warships, one of this type sank the big new Italian battleship "Roma" as she was steaming down to Malta at the time of the Italian surrender.



Cosily nestling under the belly of a Dornier medium bomber, the "FX-1400" is here shown ready for use. Had such guided missiles been ready in 1941, their effect on the British Navy might have had sweeping consequences on the course of the war. As it was, the "FX-1400" wasn't used until 1943.

gun type might shake up U. S. daylight strategic raids, but they could not, in the end, do more than harass them. In the flak guided missile, the Germans thought they might have the answer to superior Allied air power. They thought they might end the rule of the air over Germany by the R. A. F., the 8th, and the 15th Air Forces. Air-to-air guided missiles were



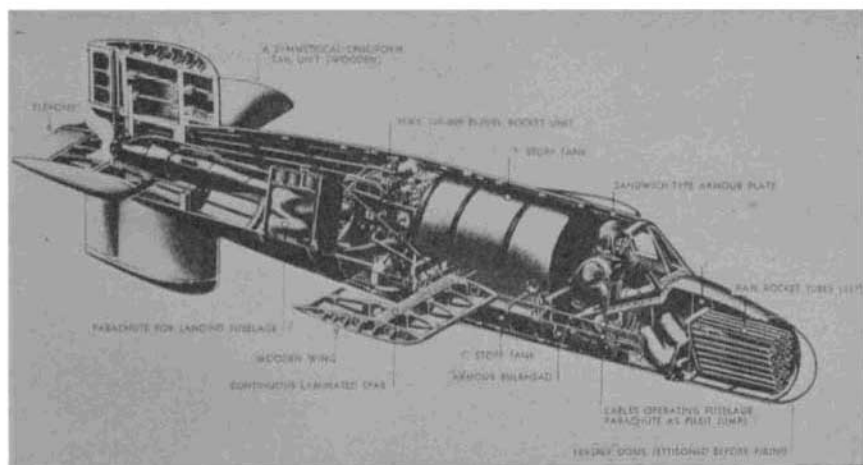
At first complacent in the face of the strategic bombing threat, the Germans in 1943 became fearful, then frantic. They were willing to try out any possibly effective counterweapon. One of these trial weapons was the piloted rocket called the "Natter," a test model of which is shown here.

also a good idea, but since the chances of getting fighters up to combat the Allies was reduced toward the latter days of the war, the main reliance had to be put on flak. The Germans therefore pushed several projects for flak guided missiles, instead of picking out just one type for final development and production.

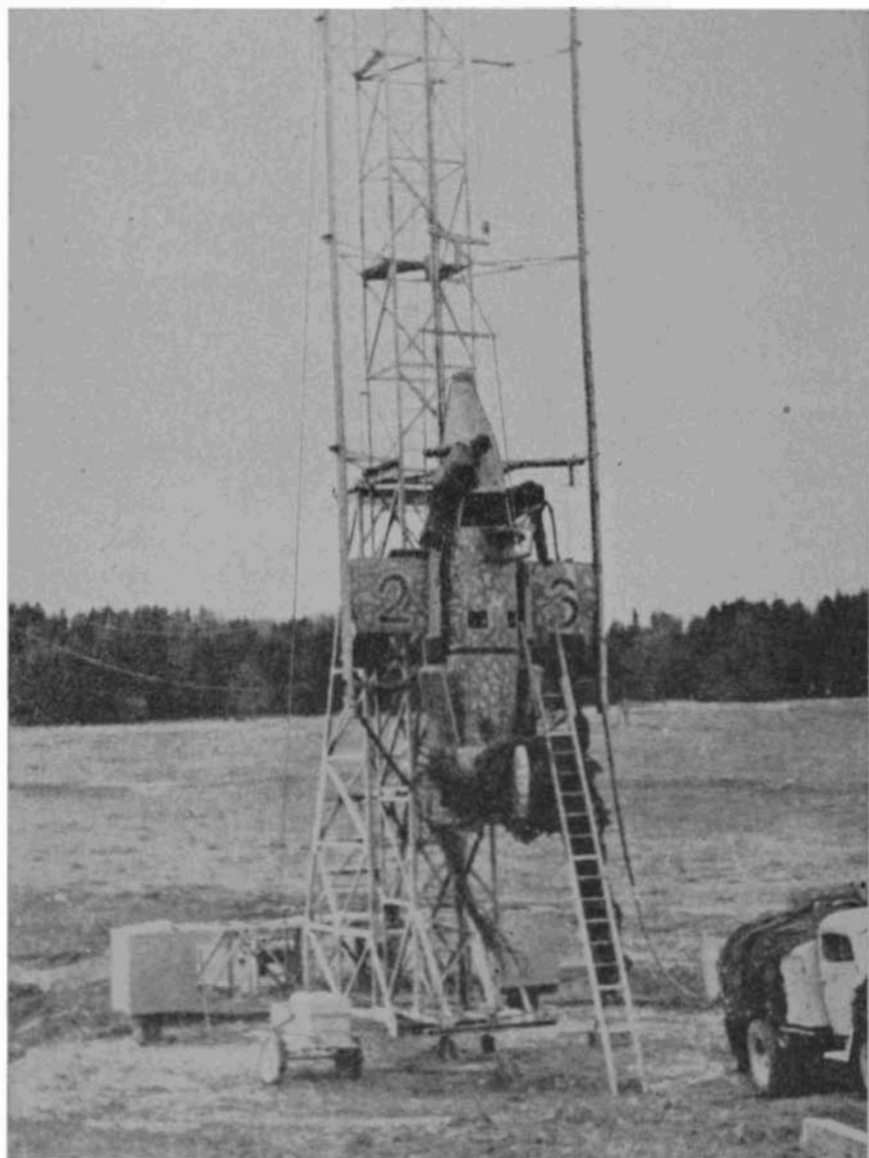
One type was the *Natter* (Viper)—a small, piloted, rocket-propelled interceptor which was designed to provide a defense for vital areas against bomber formations. It is actually a 2-ton plane, 19 feet long, and with a wing span of 10.5 feet. The *Natter* is designed to be launched vertically from a ramp with the assistance of four solid-propellant rockets which, once consumed, are jettisoned. An automatic pilot controls it until the human pilot is ready to take over. Then the main rocket motor is used to close in on the target. The pilot aims his rocket at the target, fires a salvo of some two dozen rockets from the nose, and trips a device which ejects him and the main rocket motor for descent by parachute.

This piloted missile has a horizontal speed of 620 miles per hour, a climbing speed of 435 miles per hour, and a ceiling of 39,000 feet. It is a purely defensive weapon, conceived in August 1944, built and tested in wind tunnels in November, and given a premature test in February 1945. The pilot was accidentally killed. Other tests were completed but no missiles reached actual operations. Potentially, this weapon is versatile and well-nigh invulnerable, but its main disadvantage is a short horizontal radius of action.

Of the flak rockets designed as guided missiles, the Germans were pushing four main types, known under code names as the *Wasserfall*, *Rheintochter*, *Enzian*, and *Hs 117*. Various types of control were planned, including visual-with-radio, and homing devices within the missiles themselves.



A cross-section of the "Natter" illustrates its component parts. The rocket fuel is a liquid, as in the V-2 type of rocket. The chute was used to prevent wrecking the main motor, which, like the pilot, was jettisoned.



The "Natter" was launched from a frame in the manner of a projectile from a gun. The pilot assumed control after the missile was airborne. The "Natter" represented a cross between a fighter and a suicide-type aircraft.

The *Wasserfall* was a promising rocket resembling a junior V-2. A supersonic missile, it was designed to destroy an aircraft flying 560 miles an hour at 65,000 feet, at a horizontal range of 30 miles. It measures all of 25 feet long and weighs 4 tons on the ground. Launched vertically, like the V-2, it generates about a 9-ton thrust for about 45 seconds. In that time, it picks up a speed of 2,500 feet per second (1,700 miles an hour, and

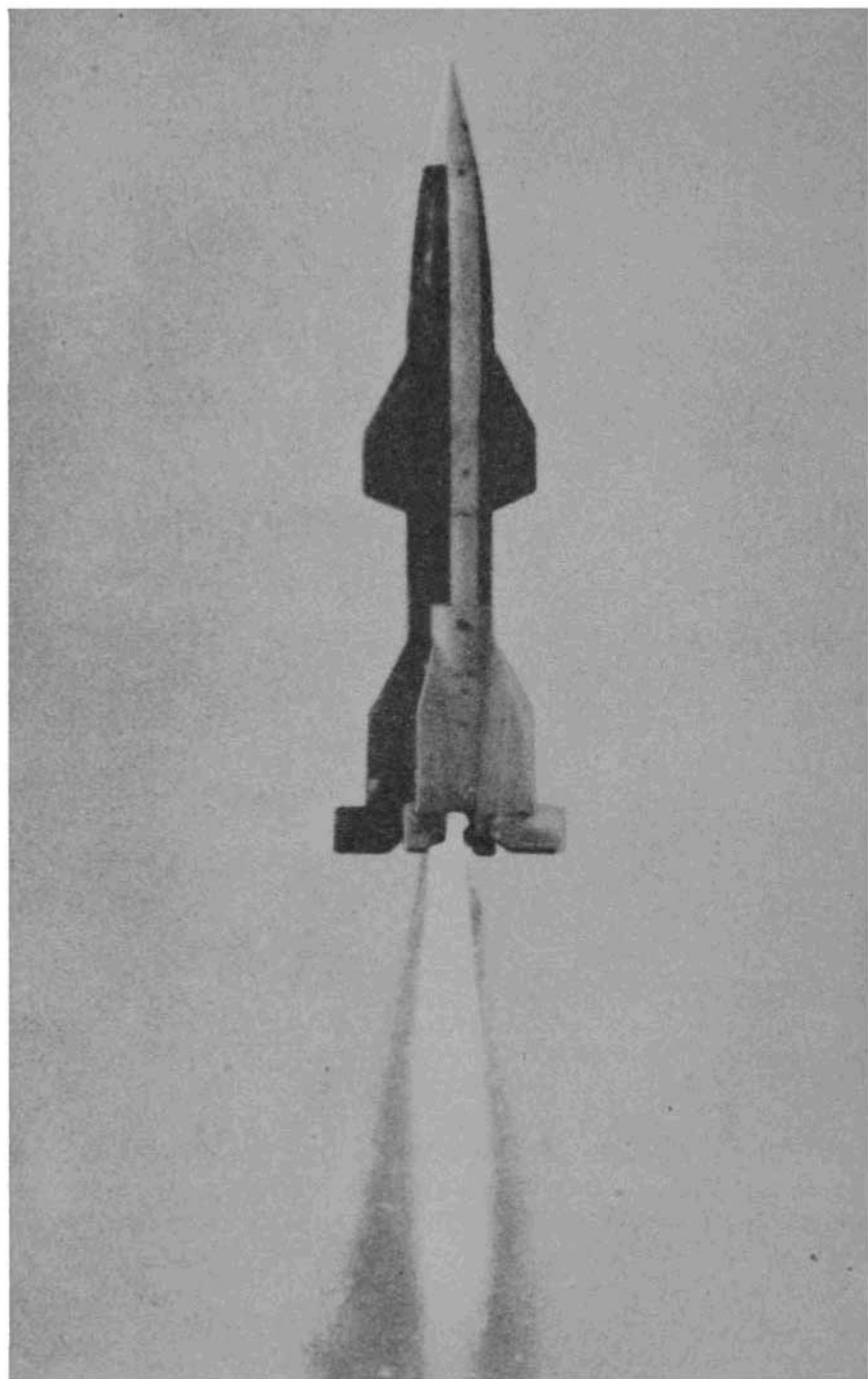


Launching of the "Natter" was impressive. The blast of its rocket gives an idea of the power used in attaining a climbing speed of 435 miles per hour—about 38,000 feet a minute. This speed was attained climbing almost straight up.

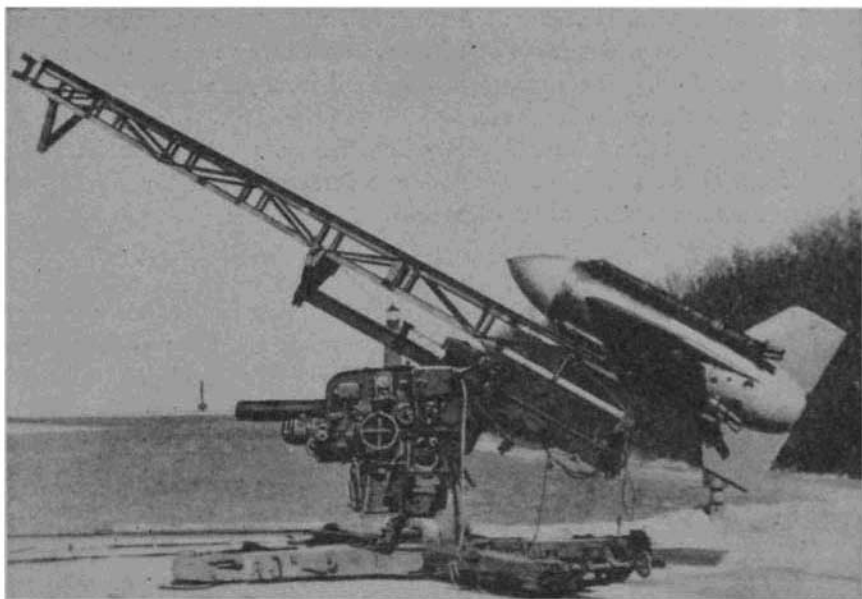
almost the 2,805 feet-per-second speed of an M1 rifle bullet). This speed is achieved upon attaining an altitude of 60,000 feet.

Initially, the German guiding scheme was to provide two radar sets for tracking, with radio for control. Later, an infrared proximity fuze and homing device were scheduled for installation.

Though the design was finished in 1943, and 25 missiles had been fired and final operational tests completed in January of 1945, the *Wasserfall's* development was not concluded before the war's end. The Germans had, nevertheless, begun work on its production, hoping that it would be the high-altitude flak weapon they needed so badly.



The real flak weapon, which might have cleared the skies over Germany, was the flak rocket, guided to its target by various devices. Chosen for the major production attempt was this junior V-2, the "Wasserfall."



The fat "Enzian" was another of the flak-rocket guided-missile projects selected by the Germans for development. Its relative size may be judged from the 88-mm gun mount on which it is shown (top). The launching of the "Enzian" is seen below. Fortunately, none of these projects had passed from test into operations before the armistice.



Of the other principal flak missiles, the *Rheintochter* went through several versions. It was a development of Hermann Goring's great Rheinmetall-Borsig arms firm. The *Rheintochter I*, fired from an altered 8.8-cm *Flak 41* carriage is shown on the cover.

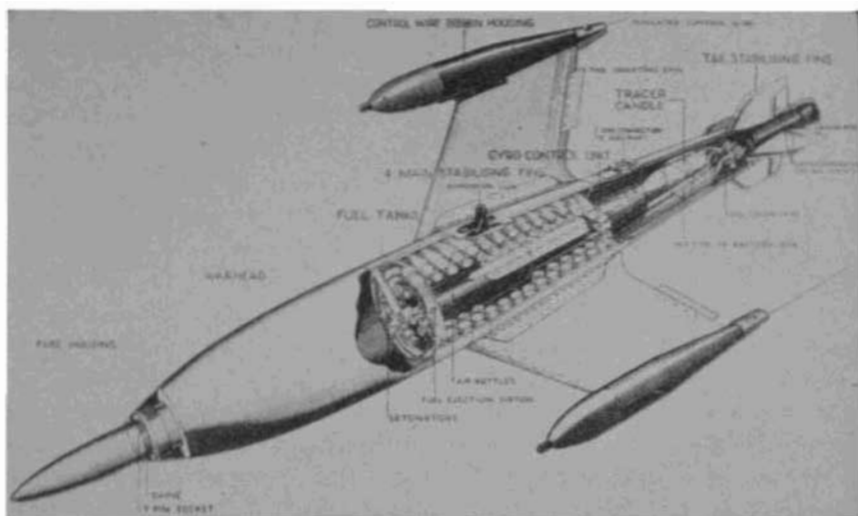
The *Enzian*, named after a pretty blue flower, was a short fat rocket fired from an altered 8.8-cm *Flak 18*-type carriage, while the *Hs 117* was a thinner small rocket, similarly launched.

AIR-TO-AIR

While flak rockets were of possibly decisive value to the Germans, their dwindling *Luftwaffe* could nevertheless have made great use of the various air-to-air guided missiles that were being feverishly developed. The advantage of such missiles lay in the attacker's ability to stay outside a B-17's .50-caliber gun range, and to deliver an accurate missile that would pack enough explosive to deal with even such a well-built ship. Just how German aircraft would have gotten by the bomber's fighter cover is another matter, but the possibilities, for a situation in which neither side has absolute command of the air, are quite apparent.



So urgent was the need for flak rockets when previously overconfident Nazi leaders recognized the air menace, that some four types were pushed to completion. One of the types was the "Rheintochter" series. This photo shows one of the weird "Rheintochters" in flight—the same missile shown on the cover.



Though Germany was hopelessly outclassed in the air, guided missiles launched against Flying Fortresses and Liberators from German fighters might have had considerable effect in combat strategic bombing. This cross-section view shows the German "X-4," a rocket-guided missile scheduled for operational use.



This German sketch illustrates a German twin-engine fighter guiding an "Hs 298" rocket-powered missile against a U. S. B-17. In this case, the fighter crew flies the guided missile with a control stick, which creates signals transmitted by radio to the controls of the missile itself.

One of the typical German air-to-air missiles was the X-4. The X-4 is a small, 6½-foot, four-winged missile designed to shoot down one aircraft after being launched from another. It is controlled by electrical impulses transmitted over two wires which unreel back to the parent plane. It weighs 132 pounds, and has a warhead of 44 pounds. Designed to be launched from fast fighter aircraft, the rocket has a range of 2,700 yards. The rocket fuel produces an initial thrust of some 300 pounds, which falls off to about 50 pounds after 30 seconds. Stability is achieved by means of four plywood wings designed to rotate the missile at 60 revolutions per minute. The four fins at the tail have rudders which give it horizontal and vertical control on command of the pilot. Two wire spools mounted on the missile's wings play out fine wire from the X-4 to the parent plane. A commutator device in the missile transmits the commands into correct time impulses to the rudders. The fuze consists of a combination impact, self-destructing, and acoustic proximity type. The X-4 was in production at the end of the war, but outside of some successful firing tests it did not reach actual combat operations.

CONCLUSIONS

Observation and evaluation of the work of the German scientists at Peenemünde has not been completed. It is possible, however, to draw a conclusion as to the goal toward which they were working. Obviously, their ultimate objective was the day when they would be able to hit with accuracy any area on the face of the earth with weapons which could carry great destructive power in the form of high explosives.

No guided missile developed by the Germans is a logical weapon to be exactly duplicated for practical use by any other nation. However, further development of the guided missile to provide weapons for possible future conflict is logical and perhaps necessary. German experimentation has provided a basis for intensive study of the subject.

Guided missiles have provided new problems for all the services. The Germans very nearly had an effective countermeasure against bombing. Within a short time they would have produced infinitely superior assault weapons.

German advances in the field of guided missiles gives emphasis to the thought that the country which neglects, until the time of war, the development of new weapons with which it may be compelled to fight in the future, will not survive the first assault, if attacked by an astute aggressor.



COMPULSORY MILITARY TRAINING IN THE U. S. S. R.

When, on a Sunday morning in December 1941, the United States was thrown so abruptly into World War II, this country was better prepared for conflict than it had been at any time before in history. Farsighted men, recognizing the existence of "national emergency," had established the selective service system, inducted the National Guard into Federal service, and called up the handfull of semitrained men who comprised the organized reserve. In effect, the wheels of national military mobilization were beginning to move. But in spite of the years of planning for "M-day," and many months of partial mobilization, it was nearly a year after Pearl Harbor before the ground forces of the new Army of the United States were able to strike a first offensive blow against the hitherto victorious enemy—an enemy held back from our own shores largely by our allies, two oceans, and the lack of foresight within the enemy high command.

How then, it might be asked, could a country like Soviet Russia—also but partly mobilized—withstand the sudden, large-scale invasion launched across her borders by the then-powerful Nazi Germany, with which Russia shared a pact of non-aggression? The answer may be found not only in the initial resistance of the Red Army on the scorched earth of Russia, but in the Soviet training and mobilization system, a system made effective only through the universal military training now required of every able-bodied Soviet citizen.

COMPULSORY TRAINING BY LAW

Compulsory military training in the U. S. S. R. has not always been "universal." In the early days of the revolutionary government, the privilege of serving in the armed forces was denied to all except volunteers from the ranks of the "toilers," the workers and peasants, who were considered to be the only politically reliable element in the country. In 1918 conscription was instituted to obtain more military manpower, but the decree still limited service to "workers and peasants who do not exploit somebody else's labor." Although the military service laws were revised from time to time in the intervening years, this philosophy continued to govern Soviet



These are soldiers of the Soviet frontier guard, a separate entity among the armed forces of the Soviet Union. Before the war, the frontier guard totaled 150,000 men, and formed a substantial portion of the pre-Hitler Red Army.

conscription until September 1939. In that month, with Hitler's armies overrunning Poland, military service in Russia became truly "universal" when the law was amended to include "all male citizens of the country, regardless of race, nationality, faith, educational qualification, social origin, or position."

Although induction to service in the Red Army, before the war, took place during the year that the prospective Soviet "G. I." reached his nineteenth birthday, actually his military training began as a young boy in school. His first 7 years as a schoolboy included a physical training program designed to make him healthy soldier material. During the next 3 years, the young Soviet citizen received his preconscription training. Although this instruction may be compared to our own C. M. T. C. training, it was somewhat more intensive. The student received a course of basic training that included small-arms range work, company tactics, and two-week military encampments in the field.

In January of the year in which he became 19, the young Russian reported to his draft board. Sometime during the following September or October, he was inducted into the armed forces, either Army or Navy.

In the years before Nazi Germany came into being and began to rebuild her military might, the Russian armed forces were comparatively small. Between 1924 and 1934, the Soviet Army and Navy totaled no more than 562,000 men. Another 150,000 men composed a separate organization known as frontier guards. Although this total of approximately 700,000 men composed the regular strength of the Soviet armed forces, it is by no

means representative of the country's actual military might at that time. The bulk of Russia's military manpower, before Hitler's rise, was found in her semi-active territorial military units.

In a way, the Soviet territorial units may be compared to our own National Guard. The Soviet units, however, were much more active than our own. A small part—perhaps 15 percent—of the personnel in the territorial units consisted of a regular army cadre, while the majority of the personnel strength of the units was composed of a constantly rotating group of reserves and conscripts who reported for short periods of service and training.

Although some young draftees entering their first year of compulsory service were sent to the regular army and navy, the major portion were assigned to territorial units for training. Men assigned to the regular units continued normally with those units for the full period of their compulsory service. Similarly, the men who were inducted into territorial units usually completed their full service with their unit, although they might only be on "active duty" during that portion of each year that their territorial group was called in for training. In time, these periods of active training produce a reservist nearly as efficient as those men who are assigned to regular units.

Before the war, the Soviet draftee's first year of compulsory military service was devoted to basic training, divided between two periods. The first period consisted of physical training, infantry drill, combat training, administrative, sanitary, and veterinary schooling, and political indoctrination. This phase completed, the trainee took the oath of allegiance and entered upon his second training period. The second period included a continuation of the same subjects he had been studying, with the addition of performing garrison and interior guard duty. He also took up tactical training with sand box maneuvers, field exercises to teach him the combat principles of the individual soldier, and then the tactical training in small infantry units, such as squad and platoon teamwork. This was finally followed by training in the development of a system of fire, including the use of machine guns and mortars.

When the Soviet selectee entered his second year of compulsory service, he was already a reasonably well-trained soldier. But during his second year he received extensive combat training and coordinated action with other arms and services, and with larger military units. Continued range work, combat firing, and maneuvers completed the training of the ordinary ground force soldier.

The selectee was returned to civil life after 2 years of compulsory service—if he were only a private in the ground forces. If he had advanced to the grade of a noncom, he served an additional year, and if he was in the technical forces, air forces, or the navy, he would serve a total of 3, 4, or 5 years, respectively.

When the Soviet youth finished his initial years of active training, he was not put on an inactive status immediately. Instead, he was sent home on an extended leave that lasted for the remainder of the 5-year period

which began with his initial induction to service. During these years of detached service, the man was liable to recall from leave for short periods of refresher training, which would not total more than a month in any one year.

After the 5 years in which he was liable for compulsory service—both active and detached in either a regular or a territorial unit—the now-trained citizen soldier was placed on inactive status and assigned to the enlisted reserve. As a reservist, the Soviet citizen, until he is 50 years old, is liable for duty in time of need, the reserve group being divided into three levies: first levy up to 35 years of age, the second 35 to 45, and the third levy 45 to 50.

EXEMPTIONS AND DEFERMENTS

Although exemptions from compulsory military training are granted only to persons physically unfit for even limited military service, deferments from service were quite extensive during the prewar years. Deferments were granted to students for the period necessary to complete their schooling. After they left school, these deferred students served on active duty as probational junior officers and noncoms for 1 to 2 years. Upon completing their military service, such persons may continue on active duty as part of the regular cadre, or they may revert to a reserve status. Failure to maintain the necessary standards during training, if not corrected within 2 months, resulted in the officer or noncom being reduced to the ranks where he continued his training as an ordinary selectee. In addition to students, scientists, rural school teachers, workers sent to distant areas, relocated farmers, and qualified specialists on the collective farms could be deferred from compulsory service until any time up to their thirtieth birthday.

A large percentage of the prewar male population of Soviet Russia fell into another classification. They were the vitally needed workers in industry and agriculture, individuals with dependents, and men with lower physical qualifications. Although they were not required to perform the same service as a healthy, single, 19-year-old selectee, they were attached to their local territorial unit and were called up for periodic military instruction, not in excess of 3 months in any year, until a total of 8 months military schooling had been completed over a period of time.

Thus nearly every male Soviet citizen received some military training, although the amount varied according to the individual and his occupation or position within the framework of the communist state. Failure to report for service on the assigned date, unless for such reasons as serious illness, arrest, accident en route, etc., is regarded as an offense against the state. The penalty for such an offense was, in time of peace, service for 6 months to 2 years in a disciplinary battalion. In time of war, punishment could be from 3 to 7 years imprisonment, or else assignment to a penal battalion engaged in extra-hazardous work. In peacetime, desertion by a conscript was punished by 5 to 10 years imprisonment, while death and confiscation



Red Army troops and trainees on the march during a prewar training period. During the last half of his first year of compulsory service, the Red Army trainee undergoes a schedule of consistent field training.



Much of the prewar Red Army was composed of territorial units similar to our own National Guard. Territorial units were organized in all parts of Russia. This is an officer of territorial troops from southern Russia, instructing his wife in marksmanship.

of property were the result of desertion during time of war. In addition, desertion or failure to report for service stopped dependency allowances and all other tax exemptions and privileges accorded men in the Red Army.

MOBILIZATION IN TIME OF WAR

When the U. S. S. R. was attacked by Germany in 1941, the Red Army had been partially mobilized. By 1939 the territorial units had been inducted into the regular army—a move not unlike our own partial mobilization when the National Guard was called to duty during the national emergency. But such was the scale of the Nazi invasion, that the Russians were compelled to rush their full-scale mobilization. This was accomplished according to a plan which, as history has shown, paid off in one of Russia's darkest hours.

When Red Army reservists completed their compulsory service, they were placed in one of four categories. The first category, or first priority reserve, was made up of men who were assigned to active units of the Red Army. Although these men were not on active duty, in the event of war they were to report to their assigned units within the first 5 days of the mobilization. In this manner, a certain number of first priority units could be brought up to full strength within a comparatively few hours after the mobilization call.

The second category reservists were also assigned, though on inactive status, to other active units which were slated to expand to form larger or-

ganizations. Thus, in a comparatively short time, companies expanded to form battalions, battalions to form regiments, and regiments to form new divisions—the majority of the personnel in these units being the trained reserves. Since both first and second priority units were designed for quick mobilization, and were considered ready for action when fully formed, they were mobilized with an overstrength of personnel to provide for replacement of expected casualties.

All other reservists were unassigned, but they also had their place in the Soviet mobilization system. After "M-day," third category reservists reported to the Red Army reception centers. At the centers they were assigned as needed to third priority units which were being organized around cadres of regular troops. Finally, reservists in the fourth category reported to their draft boards, and, as they were needed, were ordered at a later date to report to a reception center for further assignment and duty.

Experience proved that this system, based upon a peacetime-trained reserve, worked very well in time of need. The history of one third-priority Red Army "formation"¹ shows that "starting from scratch" it required only 107 days from the date activation orders were issued to the date the formation first went into action. Some 35 days were spent in receiving the initial cadre, the officers, and the enlisted strength. Five days were spent drawing weapons, 15 days were used for small-unit refresher training, 5

¹ The Red Army "formation" has no exact equivalent in our army, but may best be described as a task force or combat team, usually of brigade or divisional size.



Even trainees assigned to territorial units must spend a certain period of each year in field training. This Red Army training camp reflects the good discipline and high morale of its occupants.

for battalion and regimental training, and another 5 days for training on the division level. The next 18 days were spent preparing for movement, whereas the actual movement of the unit to the combat zone took a total of 26 days. After the movement, 4 days were spent changing from winter to summer equipment, and on the following day, 107 days after the activation order, the unit went into action.

When the U. S. S. R. became fully embroiled in World War II, the compulsory service age was lowered 2 years in the case of graduates from secondary schools, and 1 year in the case of other conscripts. Since the Red Army was actively engaged in combat, trainees were sent to replacement regiments for training which lasted from 4 to 12 months, depending upon the arm or service to which the conscript was assigned.

In the future, the efficiency of the Soviet compulsory military training system can be counted upon to be high. As may be supposed, public reaction to military service is favorable, due not only to the years of indoctrination by law and propaganda, but also to the distinct advantage enjoyed by members of the armed forces in respect to educational opportunities, privileges while performing military service, and the career advantages found both during and after service with the Red Army. Also, the people of Soviet Russia have learned, through years of bitter warfare in their homeland, the value of preparing for national security before—not after—“M-day.”

DEFENSE BY FLAME

Ever since the Byzantine Greeks used "Greek fire" in ancient naval warfare to destroy the fleets of their enemies, flame has been a weapon in the arsenals of all nations. World War II was no exception, and this article gives an insight to some of the more unusual methods of flame warfare as contemplated by both the British and the Japs along strictly defensive lines.

FIRE—the ancient weapon of warfare, was groomed for its debut in World War II by both the British and the Japanese. Plans were laid by these nations to greet invading troops with walls of flaming oil and gasoline. Although extensive installations were prepared, neither nation employed fire except in flame throwers and incendiaries.

Britain, then inadequately armed, prepared to unleash walls of flame against any German attempt to land troops across the English Channel. Japan prepared plans and installations to protect her war-gained empire with fire, particularly those parts which were rich in oil.

Mile upon mile of Britain's coast line lay vulnerable to attack after Dunkirk. Few guns were available to fight attempted landings. The Navy was occupied quelling rising German sea power. The Army was depleted. The newly-formed Home Guard was inadequately armed, not fully trained.

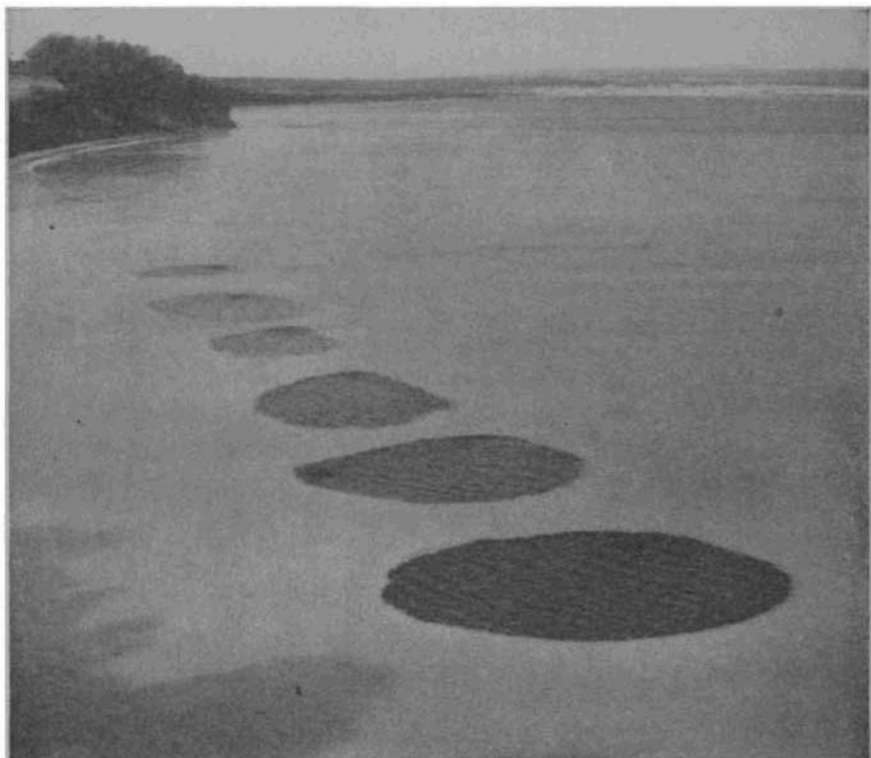
DEFENSE IN DEPTH

To develop urgently needed defensive measures, the Petroleum Warfare Department was created to exploit oil. Several lines of defense were developed. First, an attempt would be made to burn out the enemy while he was still at sea. Next, a flame barrage would be launched ashore against troops successfully landing. Should the enemy have secured a beachhead, his advance inland also would have been harrassed by flame.

Water defenses consisted of a line of nozzles set 25 to 30 yards apart and concealed by the sea. The nozzles were connected by direct lines to oil tanks, buried to reduce possible damage from artillery or bombardment. Each tank contained approximately 45 tons of fuel. Although the mixture varied, it consisted basically of equal parts of gasoline, kerosene, and Diesel fuel.

Naval-pattern calcium-phosphide flare-canisters were prepared to ignite the mixture. These canisters could be ignited electrically from remote control points and could burn for 5 hours.

The oil was allowed to flow for approximately 1 minute before ignition, thus allowing time for the pools of floating oil to link into a continuous line. When finally ignited, the first flame rose 15 to 50 feet with high temperatures.



In the event of an attempted invasion of her channel coast, Britain had prepared a fiery reception. Here (above) pools of oil, fed through pipes from inland tanks, spread over the surface of the water adjacent to a possible landing beach. Ignited (below), the oil formed a defensive wall of flame that could burn for 5 hours.



An invading force breaching the first wall of flame would encounter similar lines laid in 200-yard sections along the beaches above high water and in ditches and dikes.

ROADS PROTECTED

Strategic roads were protected by 4-gallon drums of fuel set in hedge-rows. When an explosive charge was ignited in the drain pipe beneath the drum, a 30-foot sea of flame would envelop the road.

Batteries of drums, two containing highly volatile fuel and two containing thickened fuel to promote adhesion to vehicles, were concealed in embankments above roads. They were attached to lines of sprays capable of covering road sections with flame. The fuel could be ignited either by incendiaries or by remote control systems.

Road defenses also were supplemented by Hedge-Hoppers, barrels of oil which were thrown by explosive charges 15 or 20 feet into the air to drop a cascade of flame on passing vehicles.

Flame also was adapted as a defense against low-flying airplanes. An antiaircraft flame thrower was developed which was capable of throwing a jet of flame to an altitude of 280 or 300 feet. This weapon was lanyard fired and delivered 10 bursts of 1½-seconds duration. The Germans later incorporated a similar weapon on their flak ships.

JAPANESE PLANS

Captured Japanese documents and installations reveal plans to employ oil as a defensive weapon for hot receptions, particularly in areas rich in oil, "to burn and kill the enemy, stop his advance, and cut off his retreat."

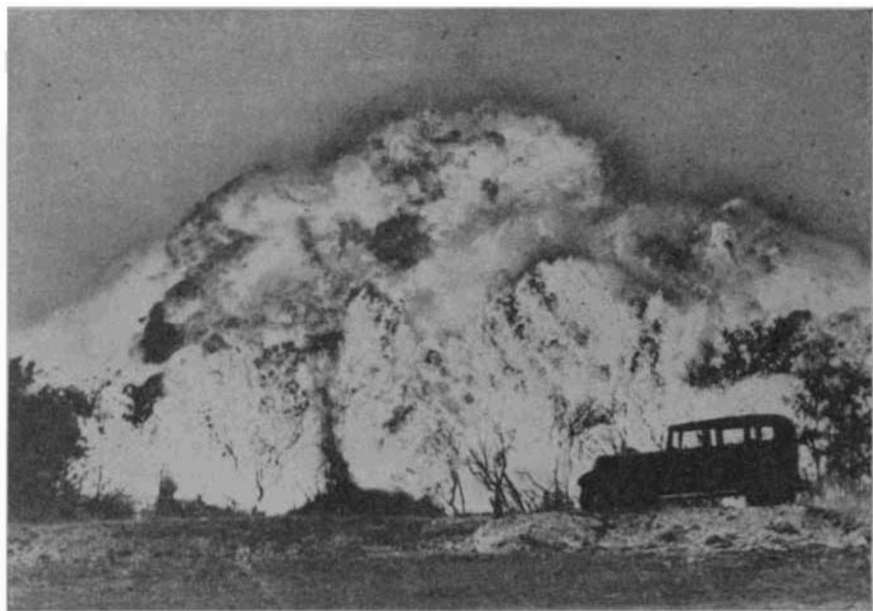
Australian forces landing at Balikpapan in Borneo were opposed by flame defenses which might seriously have hampered operations had they been completed and employed to best advantage.

One small ditch running at right angles to the beach contained 44-gallon drums which were prepared for ignition, but were not used. However, blazing oil ditches were used against tanks on the road to the Sambodja and Samarinda oil fields.

Captured Japanese documents outline plans for secreting oil at key points. They stress the necessity for completely concealing and protecting the oil tanks.

The oil would be supplied to small buried or protected tanks of 50 to 100 tons by supply pipes branching off from the main pipe lines. (The tanks supplying the pipe lines were smashed by bombardment.) Small drains would enable the oil to flow from the tanks to the river. The Japanese intended to use heavy box-type time igniters to light the oil. These were to be activated and floated down streams. Flame throwers were to be concealed at key points on the river banks for direct ignition.

"... Preparations will be made in positions where the descent of enemy airborne forces, accumulation of supplies, etc., are anticipated," the cap-



Many of the roads leading inland from the channel beaches were booby trapped with a rapidly improvised petroleum weapon, called the fougasse, which was capable of releasing 1 ton of burning oil when fired.

tured plan states. "As soon as the enemy is attacking, the oil will be released and ignited to burn and kill him. . . . The velocity of the flowing oil and the extent of burning must be great. . . . Efforts must be made to spread the oil over a wide area by means of canals and drains constructed to join natural rivers and streams."

CHINDWIN PLANS

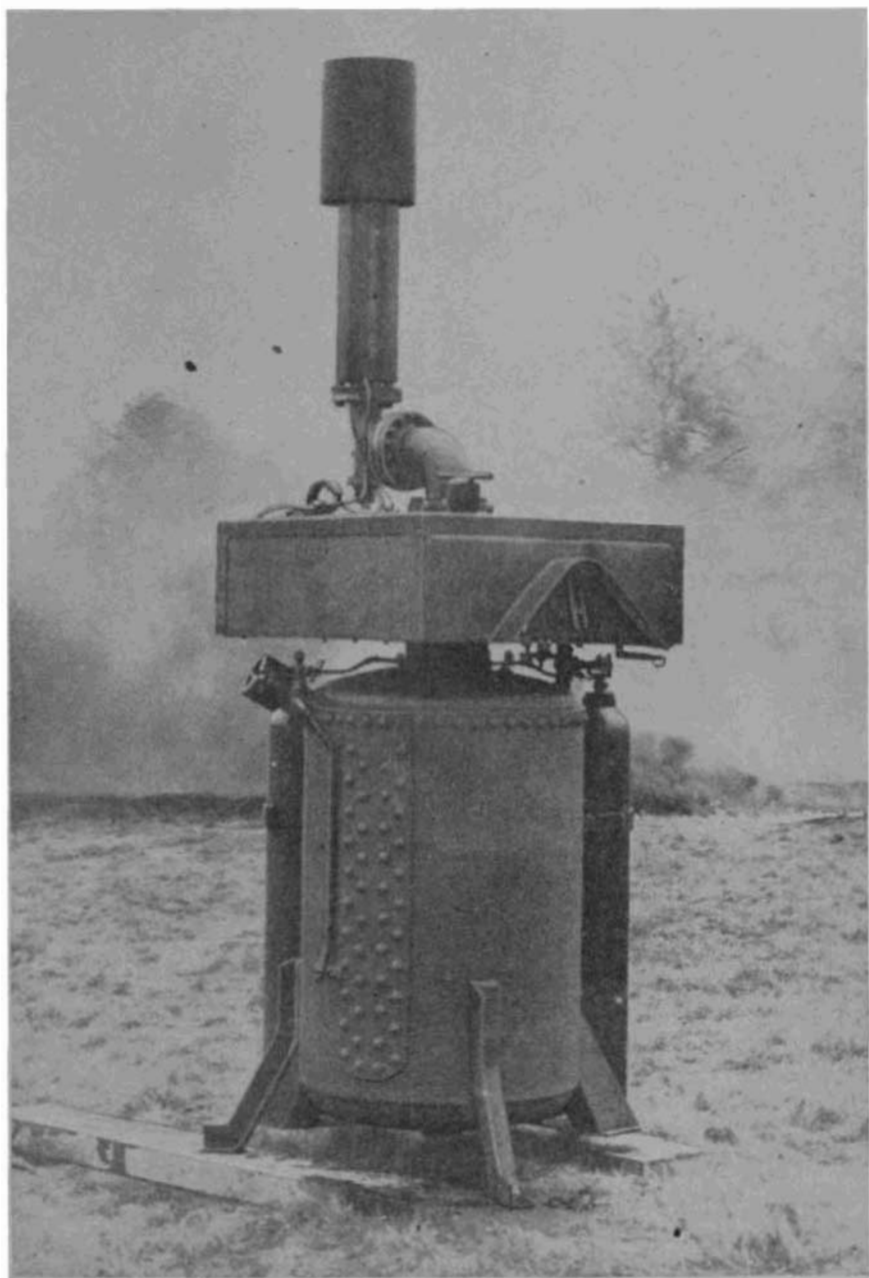
British troops discovered four or five hundred 45-gallon drums lined up on the banks of the Chindwin river at Kalewa in Burma. Approximately 40 of the drums had Model 99 magnetic mines attached to them and connected together with primacord. It is believed the drums were part of an uncompleted plan to light up and possibly set afire the Chindwin at a place where East African troops were expected to cross. The portion of the plan which was completed was not carried out. British troops crossed at a point north of the installation rather than where the Japanese expected the crossing.

Other documents captured on Okinawa, Guam, Peleliu, and Saipan describe flame defenses in detail.

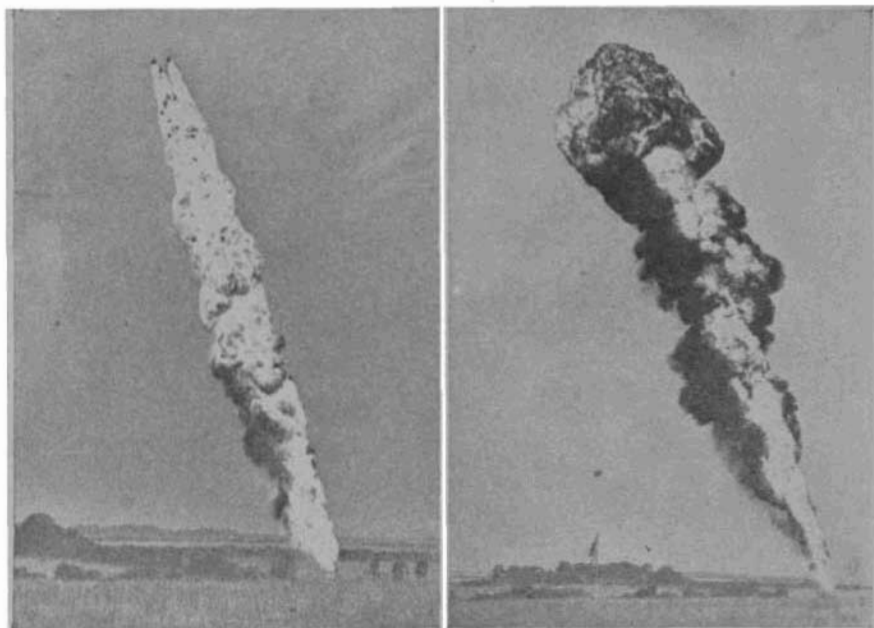
"Set up a number of cans of gasoline (about 100) in a low point of a hollow in a slope where enemy tanks must pass. As all the enemy tanks enter the hollow, ignite the gasoline, thus firing the tanks and annihilating them," states one document.

Other plans included embedding drums on beaches about 5 yards apart

and exploding them by master switches or individual trip-wire systems as landing troops reached the shore; floating drums out to meet approaching landing craft and exploding them among the boats with machine gun fire;



This anti-aircraft flame thrower was developed for the defense of air fields and other strategic areas subject to attack by low-flying aircraft or airborne troops.



These two views illustrate the range of the anti-aircraft flame thrower pictured on the preceding page. It could be used vertically (as shown) against low-flying aircraft, or it could be directed at enemy forces unloading from aircraft that succeeded in landing.

dropping fuzed drums of gasoline from airplanes; sinking drums in water, puncturing them, and igniting the escaping gasoline; pouring gasoline upon the water from the shore and igniting it.

Although two nations made extensive preparations to give invaders "hot welcomes" via the medium of burning petroleum, this ancient weapon of fire was not used defensively to any great extent during World War II.



GERMAN COMBUSTIBLE CARTRIDGE CASES

The Gestapo wanted only ammo that would leave no traces, but their experiments were on a line that may revolutionize automatic weapons.

The Nazi Gestapo was not famous for using finesse while “liquidating” suspected enemies of the *Reich*, but they did seem to be touchy about leaving empty cartridge cases at a “scene.” Consequently, German arms experts carried on experiments from 1932 until the end of the war in an attempt to develop a cartridge case that would be consumed in its own explosion when fired.

The experts didn’t succeed in perfecting such a case for general use, but they did develop one variety which could be fired from a special-type, single-shot rifle or carbine. They also developed at least one machine gun to fire the cartridge.

Experimentation proceeded along several lines. Some of the developments could not be properly called “combustible.” Some of the experiments verge slightly on the rocket field.

At one stage in the development, the Germans experimented with bullets which took the case along with them when they were fired. One such cartridge used the normal 7.92-mm bullet. The jacket assembly, however, was greatly flared at the base, had a shoulder but no neck, and the internal section of the base was filled with powder. The base was closed off with a primer in the normal position, but there were a series of vents in the face of the base to permit the escape of powder gasses on combustion.

Design was such that when the cartridge was fired the gasses escaped through the vents, and the then empty case would collapse and go along with the weighted nose section, or “bullet.” This experiment was found to be none too successful in trials, and the project was abandoned.

Another type has been mistakenly called a “rocket.” Actually it was a 9-mm bullet jacket with a bullet nose. It was intended for use in a special pistol. About 1.6 inches long, this jacket had a nose containing a lead core, with the remainder of the cavity filled with propellant. The base was crimped over to retain the propellant and hold a primer. Four holes around the primer permitted the gas to escape and this, pushing backward against a sealed breech, drove the bullet from the barrel. Since the propellant continued to burn during the first stages of flight, the bullet was mistakenly called a “rocket.” This, too, was eventually abandoned as impractical.

Then came the true combustible case. First experiments were with a

bullet having a cavity in the base that contained the propelling charge. This dates back to the Volcanic Pistol, an American development of 1854. This, however, didn't lend itself to satisfactory ignition and smokeless propellants didn't work well.

Then the Magdeburg laboratories of the Polte firm were assigned the job of developing a cartridge case that would also serve as the propelling charge. After many months, the Polte firm developed a special 8-mm cartridge. Several thousand of these were made for the Gestapo.

Produced from gelatinized nitrocellulose, the plastic cartridge case was shouldered, but had no neck. Inside, the case had a straight cavity of the same diameter as the bullet, or 8.36 mm. The bullet weighed 208 grains, was jacketed and boat-tailed.

The primer of this cartridge contained no metal. Instead, a precompressed pellet of explosive percussion mixture was inserted in the pocket normally occupied by the primer and a sealing disk of combustible plastic was placed over it. Inside the case was a light charge of ignition powder to initiate combustion of the case. The case weighed about 45 grains.

Experiments with this cartridge didn't reach perfection, but were definite steps in the direction of success. It was difficult to get precision formed cases and the cases were inclined to crack or split in storage, due to the strain of holding the bullet.

In addition to the experiments already mentioned, the Germans were experimenting with this type cartridge for "mimicry guns"—a pencil or fountain pen type of gun that is easily concealed on the person and does not, from casual observation, appear to be a weapon. Experiments were carried on with 4-mm and even smaller calibers.

In looking for combustible ammunition because it would leave no traces, the Gestapo was definitely seeking a giant to do a pigmy's job. Without doubt such ammunition would have been very useful from the security point of view. The average man will nevertheless believe that the security problem could have been solved quickly by some simple bag or other attachment on the gun to catch the expended cases. The fire fights that the Gestapo got into, could have called for no great expenditure of ammunition at one time. Periods would probably have intervened wherein bags could have been changed, and the contents dumped in a pocket or hidden.

The organization to which combustible cartridge cases would have been of inestimable value would have been the Germany Army. Introduction of practical cases would have meant the elimination of extractor and ejector mechanisms in automatic weapons. With these troublesome features gone, many of the problems of automatic weapon design and functioning would have been eliminated. Further, the presumably light weight of consumable case ammunition would mean that more rounds could be carried by an individual.

Since the trend today is towards more and better automatic weapons, the combustible case has a great military future. The Gestapo's experiments

have helped to clarify possibilities. When combustible cases are combined with present developments in chrome-lined barrels (an anti-erosion idea introduced by the Germans during the war), heat-resistant light metals, and recoil checks and compensators, the modern infantryman of almost any army will be likely to have an automatic weapon that will greatly enhance the importance of each individual member of what is now the conventional rifle squad.

CREDIT WHERE IT'S DUE

Just before VJ-day, the Military Intelligence Service put out a handy little guide called *The Punch Below The Belt*. Maybe you've read it. Produced by our Dirty-Tricks Department, it was a compilation of all those sly little dodges the once-wily Jap ambushers and booby trappers used to use.

On page 21 of *The Punch*, however, we were in error. The picture here reprinted credited a U. S. Marine with spotting the routine ruse (too hasty a reconversion to civilian clothes) used by this individual to escape capture.

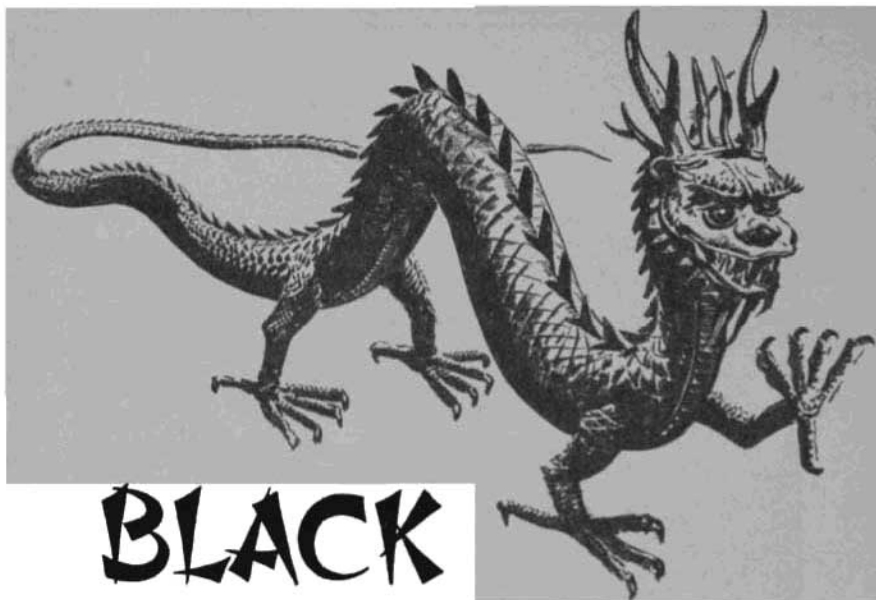
The response was emphatic. Pfc. Roland A. Martone of the 105th Infantry Regiment writes:

"Right now, with the war over, it probably doesn't matter WHO gets the credit. Soldiers, sailors, marines—everyone fought to get it over with, and everyone's glad it's finished. Nevertheless, it hurts to do a tough job well and then see someone else get the credit."

In short, infantryman Martone says that, during the mop-up on Okinawa, it was his buddies who were "on the ball," their action resulting in the capture of the Japs pictured here.

With all due respect to the United States Marines—who need no spokesman—our apologies go to Roland Martone and the men of the 105th. It's their Jap, they caught him fair and square—and it was not always an easy thing to "bring 'em back alive."





BLACK DRAGON

On the morning of February 26, 1936, in the city of Tokyo, Japan, a group of young army officers entered the home of the Japanese Premier, Keisuke Okada. A few moments later, in a burst of firing, they killed Okada's brother-in-law. The murder was a mistake. The young officers departed believing they had assassinated the Premier. Elsewhere in Tokyo at that time, similar groups of young militarists were attacking other Japanese statesmen with more success. Among the government officials who died so violently were Korekigo Takahashi, Minister of Finance, and Makoto Saito, Lord Keeper of the Privy Seal.

This was the character of the army mutiny of 1936. A group of young and militaristic officers, dissatisfied with the conservatism of the Imperial Government, resorted to the old Japanese tradition in an attempt to force a change of government policy through the medium of political assassination. Although the mutiny was short-lived, and the attempt upon the life of the Japanese Premier failed, Keisuke Okada resigned from office. In his place appeared a Koki Hirota, who recently has been seized by our occupational forces, and is being held for trial as a war criminal.

At the time of the mutiny, some experienced Far Eastern observers suspected that the assassination resulted from more than dissatisfaction upon the part of the army officers concerned. The affair showed indications of having been influenced by one of the most vicious political organizations in the Orient—the ill-famed Black Dragon Society.

The tradition of personal revenge, violence and extra-legal activity pervades Japanese history. In recent years, this tradition has been fostered in Japan by not only the Black Dragon Society, but by other secret organizations not as well-known to the westerner, but equally as malevolent in their mission and methods. Although these societies have been called "secret," and did not publicize their membership, many of their leaders have been prominent public figures, and their aims have been widely known in Japan. They have not hesitated to use such underhanded methods as threats, bribing, intimidation, blackmail, and even assassination, to attain their aims—in recent years, the aggressive expansion of the Japanese Empire.

THE BLACK OCEAN

The prototype of modern Japanese patriotic societies is the *Genyosha* or Black Ocean Society, whose origins go back to the Meiji Restoration of 1868. At that time Japan was under the military rule of the Tokugawa family, who were powerful enough to keep the Emperor Meiji in a subordinate position. Many of the *samurai* (aristocratic warriors) and *ronin* (masterless knights) were opposed to the Tokugawas. Under the Tokugawa rule, this once-powerful group of knights and warriors found themselves in desperate economic straits and a declining political position. They resented the low position of the Emperor, and the opening of Japan to foreigners in direct disobedience to the Emperor's wishes.

In 1868 these men overthrew the Tokugawa government and restored the Emperor Meiji to his throne. However, it was not long before the *samurai* found that the new government failed to improve their economic lot through their traditional profession as warriors. Furthermore, the political positions the *samurai* expected to receive as rewards went to others.

The new government refused to countenance plans of the *samurai* expansionists for an expedition of conquest against Korea. The project of expansion onto the continent had long been a pet proposal of the Fukuoka *samurai*, whose land is the nearest Japanese approach to the mainland. Finally, and most galling of all to these men who had long looked upon the profession of warrior as their special province, the government set about raising a conscript army from all classes.

In 1877, under the leadership of Takamori Saigo, the *samurai* revolted against the Tokyo government. They found their skilled swordsmanship no match for the western firearms and superior numbers of the despised conscript army.

It was following their defeat at the hands of the government forces that the disgruntled *samurai*, who had now been plotting secretly for some years, began to coordinate their subversive activities through the formation of the *Genyosha*. Among the defeated Saigo's followers were Mitsuru Toyama and Ryohei Uchida. Both of these lived ripe old ages—Toyama died in 1944—and if they were alive today, they would undoubtedly be awaiting



In 1877, the "samurai" revolted against the Tokyo government. They found their skilled swordsmanship no match for the western firearms and superior numbers of the despised conscript army.

trial as war criminals. These two men, in 1881, gathered together some of the small bands of Fukuoka men and formally established the *Genyosha*, the Black Ocean Society, which met regularly to declaim against the government, foreigners, and Korea. The society is named for the straits separating Kyushu from Korea, the shortest path to the continent.

Convinced, by the failure of the Saigo rebellion, of the futility of opposing the government by armed revolt, the *Genyosha* determined to push its expansionist ideas by cultivating the important military leaders and the bureaucracy, and through them to gain the ear of other powerful figures in the government. At the same time, the *Genyosha* began to establish a

network of agents throughout Asia, particularly China and Korea. Young men were sent to the continent, sometimes in the guise of peddlers of medicine, to investigate economic and agricultural conditions, tax grievances, roads and communications, defenses, and personalities who might be friendly to Japan. All of this information of course proved valuable to the Army and to the Foreign Office.

About 1890 the government is reported to have begun to give direct but secret support to these activities. The Society helped to whip up popular support of the military for the Sino-Japanese War of 1894-95, which resulted in the disastrous defeat of the Chinese Empire, and the elimination of Chinese suzerainty over Korea. In effect, the expansionist wishes of the *Genyosha* were beginning to come true.

THE BLACK DRAGON

After the Sino-Japanese War, the expansionists turned their attention to Russia, which was the second greatest obstacle to Japanese expansion on the continent. In 1901 Ryohei Uchida, having had such success in organizing the *Genyosha*, began organizing a similar society known today as *Kokuryukai*—the Black Dragon.

The Black Dragon Society, which, to westerners, is the best known of the Jap secret groups, drew its name from the Japanese interpretation of the Chinese characters designating the Amur River, the boundary between Siberia and Manchuria. The *Kokuryukai* immediately launched upon an anti-Russian propaganda campaign, calling the attention of the Jap public to Russia's imperialistic activities in the Far East. At the same time, the society published books intended to prove Russia's military weakness. It published accurate maps of Manchuria, furnished a good deal of the preliminary intelligence needed by the Army, and established a Russian language school. In 1904-05, the Russo-Japanese War was fought. The society is supposed to have fomented riots protesting the terms of the Treaty of Portsmouth which concluded the hostilities.

When Uchida was next heard from, he had turned up in Korea, where he worked with other Japanese for annexation of that country to Japan. His efforts certainly contributed to the ultimate annexation of Korea in 1910.

The record of the *Kokuryukai* and the *Genyosha* of meddling in Asiatic affairs, fomenting unrest, and in propagandizing for Japanese expansionism continues down to the present era. It includes the encouragement of Sun in his revolutionary movement in China, and of Aguinaldo in the Philippine Insurrection in 1899.

In 1916, an attempt was made to assassinate the British Viceroy to India. The would-be assassin, a man by the name of Bose, accepted the protection of the *Kokuryukai*. During World War II, Bose turned up in Southeast Asia as one of Japan's "quislings" for India.

In the period between the two World Wars, the Black Dragon Society worked with White Russians in Manchuria and Shanghai, with discontented

Asiatic religious leaders, and with various Chinese "war lords," and bandits. The *Kokuryukai* once staged a dramatic funeral for an unknown man who had committed suicide in front of the American Embassy in protest against the Oriental Exclusion Act. Its agents are reported to have been active in plotting the "Manchuria Incident" in 1931.

It was in 1931 that the Black Dragon showed its hand openly in domestic affairs by launching a political party, the *Dai Nippon Seisanto*—Great Japan Production Party. Ryohei Uchida, the ace agitator, was one of the founders, and his equally ubiquitous friend, Mitsuru Toyama, was listed as "advisor." The party endeavored, as did the Nazis in Germany, to mean all things to all people, in an attempt to unite fascists, nationalists, and socialists.

The new party's platform called for the abolition of political parties and of government by the plutocrats. It advocated a socialistic economy, extermination of communism and other "traitorous" proletarian elements, development of an aggressive diplomatic policy, and the establishment of the "independent" countries of Manchuria and Mongolia. To this end, the new party agitated for expansion of the Army and Navy, the elimination of the white man from Asia, and the establishment of a "rising, newly awakened Asia."

Such a platform embodied all the requirements of Fascism. Though the party itself attained no wide popular support in Japan, its principles are those which have guided Japan in recent years. It was the dominant elements within the Japanese Army which gradually adopted and expanded these same principles. As the Army grew in political strength, the leaders of the *Kokuryukai* and other ultra-nationalist societies came more and more into the open.

The *Kokuryukai* continued to serve as a propaganda organization to champion the Army's aggressive program. Occasionally it "turned the heat" on recalcitrant officers. In 1942, with Japan thoroughly embroiled in world conflict, the society announced that it was disbanding to merge with 17 other important nationalist groups to form the Greater Japan Asia Development League. This, however, was merely a gesture in keeping with the times, for the Black Dragon Society had existed long enough to see most of its aspirations temporarily realized, and its domestic opponents—the political parties and the communists—eliminated or driven underground.

"GOVERNMENT BY ASSASSINATION"

Although the Black Dragon Society operated on the fruits of every known form of espionage and gangsterism, perhaps no single weapon in its hand was more effective than the peculiar Japanese attitude toward political assassination. Assassination, gangsterism, and thuggery have long been accepted Japanese political tactics, and Japanese assassins have usually been looked upon as heroes, if it were felt that their actions were motivated by loyalty, patriotism, or other lofty "moral principles." This attitude, like

the condonation of suicide, has been a hold-over from Japan's feudal days.

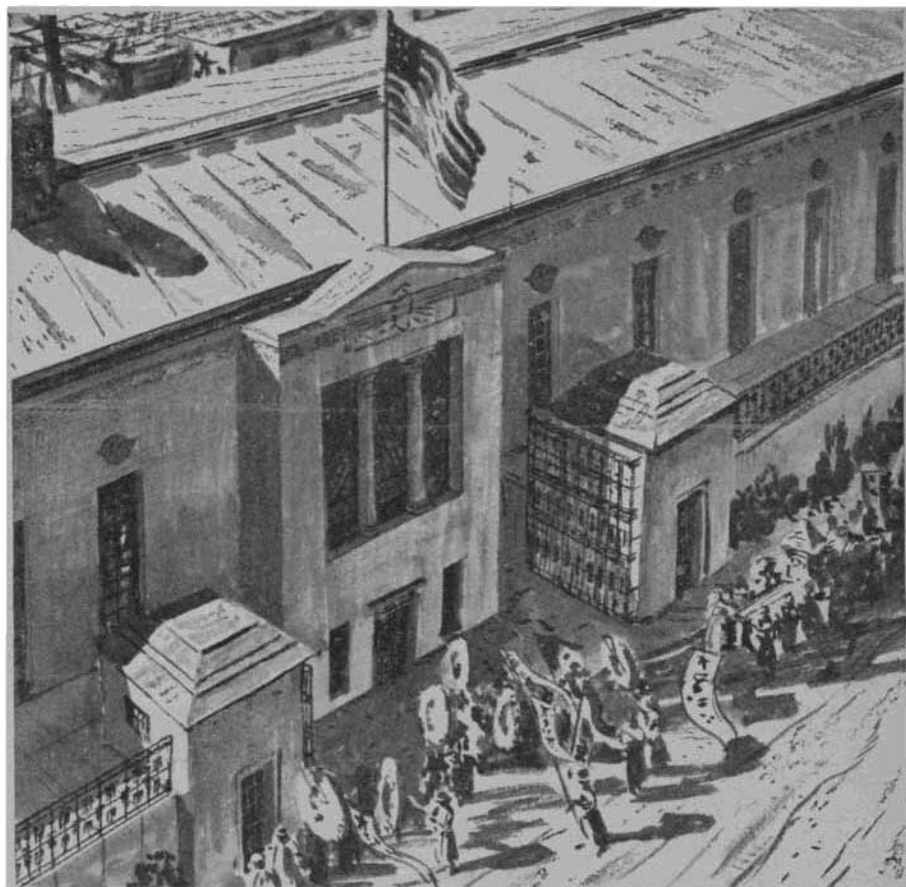
There is no certain evidence to prove that the Black Dragon Society hired assassins or thugs directly. Its methods were probably more subtle than that. However, through some of the societies connected with the Black Dragon, it did have contact with many young men who were ready tools of the *Kokuryukai*. It aroused the patriotic ardor of these young men, convinced them of the necessity of accomplishing certain ends, and pointed out the officers or officials who stood in the way. The young men would then take matters into their own hands.

By such tactics, the *Kokuryukai* became known as a protector of thugs and assassins, keeping them under cover and bribing police or judges who were charged with apprehending and prosecuting them. It was said that the police did not dare to arrest a man who had found sanctuary in the home of Mitsuru Toyama.

One incident which had been cited as a perfect illustration of *Kokuryukai* methods involves Toyama himself. Just prior to the Russo-Japanese War,



The "*Kokuryukai*" continued to serve as a propaganda organization to champion the Army's aggressive program. Occasionally it "turned the heat" on recalcitrant officers.



The "Kokuryukai" once staged a dramatic funeral for an unknown man who had committed suicide in front of the American Embassy in protest against the Oriental Exclusion Act.

Toyama undertook to "convince" the wavering Marquis Hirobumi Ito, the great statesman of the Meiji Era, that the Anglo-Japanese alliance should be concluded and war with Russia begun. By a mixture of effrontery, studied insult, veiled threat and flattery, Toyama and three husky friends secured Ito's promise to cooperate.

BLACK DRAGON TODAY

With the end of World War II and the occupation of Japan, the *Kokuryukai* has been officially dissolved and its influential leaders arrested. It must be remembered, however, that the Black Dragon was only one of many similar organizations, and the nationalistic philosophy which condoned political assassination and gangsterism permeated throughout Japan. The rank and file of the members of these societies—the young people who could be counted upon to take part in demonstrations, and could often be

persuaded to take direct action against individuals—were the product of years of nationalistic indoctrination. Until such ideas are thoroughly eradicated, there will always be the danger that such patriotic societies will continue a clandestine existence. It will be only through education, statesmanship, and the patient efforts of occupying troops, that the world will have any assurance that the Black Dragon, or a counterpart, will not again scheme to lead the Japanese Empire into uncivilized aggression.



GERMAN INDUCTION MINE DETONATOR

Detonators which will explode land mines when approached by the U. S. mine detector, SCR 625, or the British #4 have been discovered in the warehouse of a German engineer school. The device will detonate mines when the SCR 625 is held 18 to 24 inches above it or 18 inches to the side.

WOOD CASE

It is housed in a laminated wood case, $6\frac{3}{4}$ inches in diameter and $3\frac{3}{4}$ inches high, with a rubber gasket sealing the lid. It may be connected to the electric detonator or cap of any type mine by means of a covered cable lead.

The detonator consists of a resonant induction coil which picks up the mine detector signal and operates a series of relays to electrically detonate the mine. Power is furnished by two flashlight-type batteries.

Although the device is designed to counter electric mine detectors, the SCR 625 may be modified so that it can be safely used to locate the induction detonator. Modification of the SCR 625 is accomplished by reducing its power to such a level that it will not activate the detonator. Power can be reduced by placing a 2,500-ohm resistor across terminals four and five of the 1G6G oscillator tube (see fig. 16, TM 11-1122).

When the SCR 625 is operated on reduced power, it is able to locate either the induction detonator or standard metal mines from a distance of 24 to 36 inches.

METHODS OF DISARMING

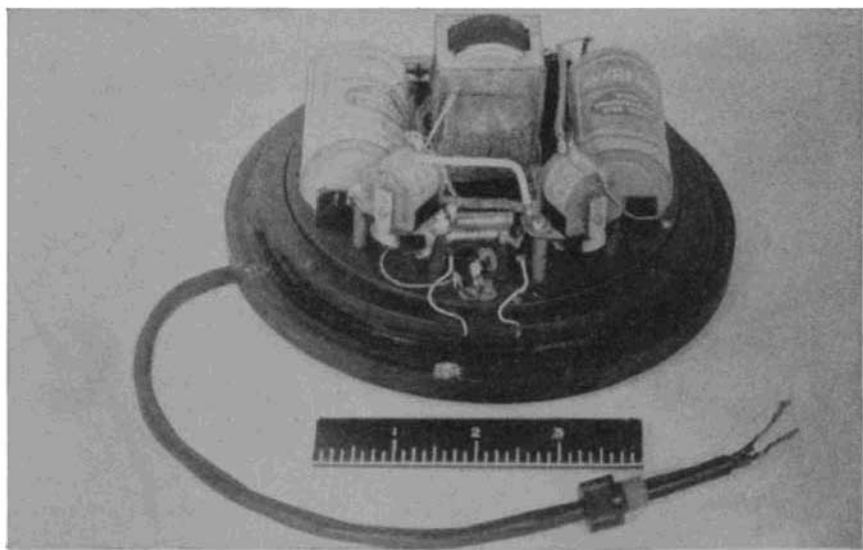
Disarming of the induction detonator can be accomplished by cutting the cable to the electric detonator or cap or by pushing a wood plug through the arming screw hole and forcing open the arming switch. However, disarming may be made more difficult by the inclusion of a series battery with the cap. When this is done, the cap will explode if the two wires of the cable are shorted by the cutter. Then, the wires must be cut one at a time.

The device also may be booby trapped so that insertion of a wood plug to open the arming switch would detonate the mine. Because the relays may not be well balanced and may be extremely sensitive to jars or tilt, standard precautions against booby traps, anti-tilt devices and similar tricks must be taken.

No information is available that induction mine detonators were used in combat by the Germans. However, the development of similar anti-mine detector devices must be anticipated.



Assembled detonator showing cable which leads to mine and arming screw. The detonator is armed by unscrewing the arming screw. The large nut is part of a tube which holds the detonator together. It is believed the tube was threaded so that the detonator could be modified and screwed directly onto the mine.



The German induction detonator with the cover removed, showing the battery-operated induction mechanism.

Many a G. I. who has driven Jerry out of a position, and knows how hard he often had to fight to hold against the inevitable counterattack, may be interested in this Red Army method of holding onto its hard-won gains.

HASTY MINEFIELDS— RUSSIAN STYLE

Like the other Allies, the Red Army discovered and disliked the German habit of immediate and successive counterattack to regain lost ground. They found that, unless immediate countermeasures were taken, the German counterattack quite often swept over them, and cost them the position they had fought so hard to get.

Among the defensive measures advocated by the Red Army, and used by them with success, is the immediate laying of defensive minefields, once an objective is occupied. The Russians make use of hasty minefields as a defense against quick counterattack much more freely than do other Allied armies.

Planning for minefield defense systems begins before the operation takes place. Vital avenues of approach are surveyed, and special engineer formations are attached to infantry troops solely for the purpose of laying mines in these areas and along the flanks of the attacking force. These mine-laying sections accompany the first echelons of attacking infantry, and carry their equipment along with them on sleds. The sleds may be towed behind tanks, or pulled by the troops themselves.

The sleds carry antitank and antipersonnel mines, detonators and prepared electrical circuits, probes, mine detectors, small arms for immediate defense of mine-laying parties, and captured artillery shells, which are often used as mines by the Russians.

Each mine-laying team is assigned a mission in advance. Some sections mine the vital avenues of approach, some the flanks of the position, and some are held in close reserve to lay mines in the path of attacking enemy tanks.

The actual laying of the mines begins the moment that the position is occupied, and continues, even under heavy enemy fire, until adequate barriers to attack have been laid. Both antitank and antipersonnel mines are used. Quite often, the Soviet engineers lay electrically-controlled mines thus permitting their own troops to move forward again through their own mine fields, without the necessity of removing the mines.

An illustration of the technique and value of placing mines immediately after occupying a position is found in the story of the following operation.

A Red Army infantry regiment was ordered to take two adjacent heights



Red Army sappers, loaded with mines and explosives, crawl out in front of a recently captured position to lay a hasty minefield under enemy fire. This Red Army tactic was often a great help in turning back the inevitable German counterattacks.

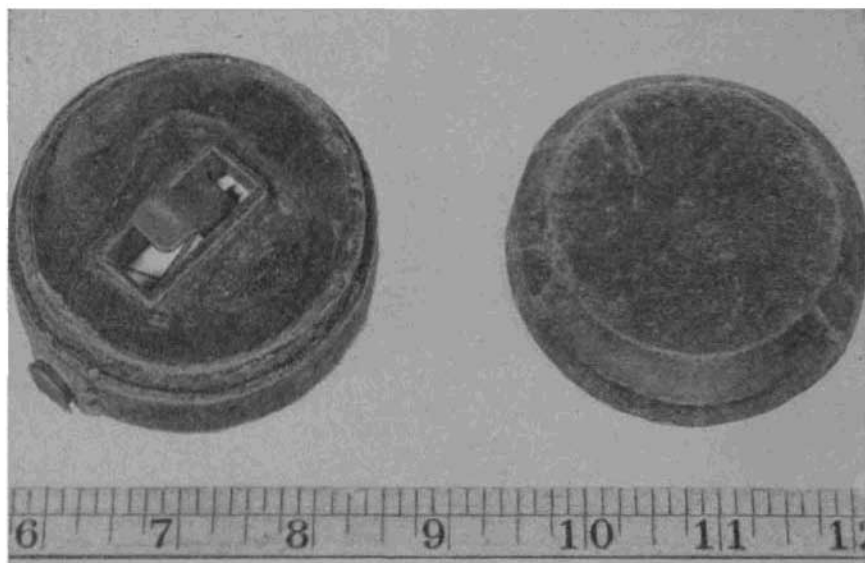
occupied by the Germans. Attached to the regiment were three mine-laying sections of one platoon each of engineer troops. Each platoon was equipped with sleds to haul their equipment.

Aided by tanks, the infantry successfully occupied the objective. Immediately, two of the engineer platoons began to lay mines on the slopes toward the enemy. The third team was held in reserve to lay mines in the path of enemy tanks as soon as they made their appearance.

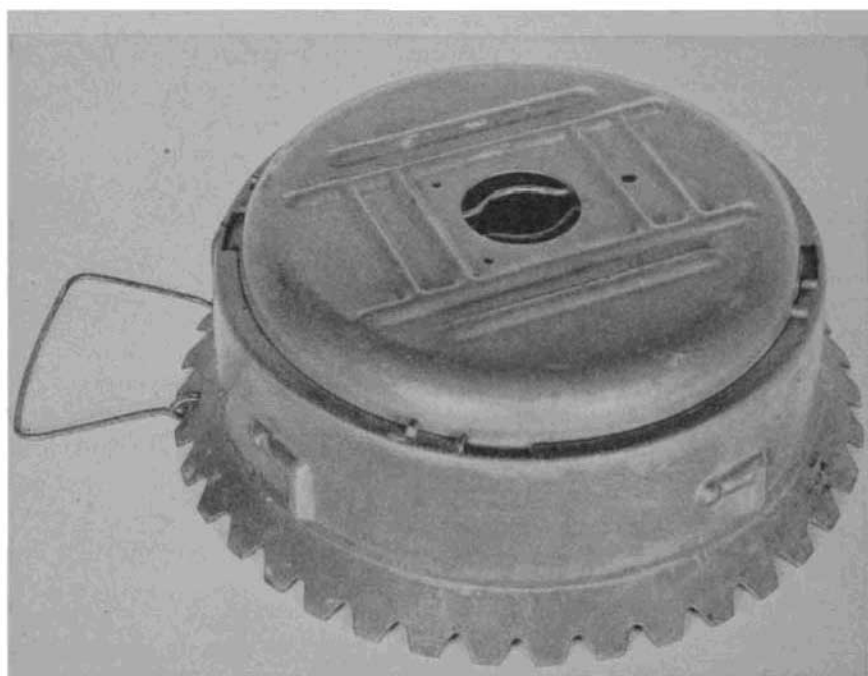
The two sections which started laying mines were able to lay four circuits of electrically-controlled land mines, each circuit consisting of three 155-mm artillery shells. They were also able to lay 94 antitank mines before the Germans counterattacked. The German counterattack included both infantry and tanks.

In spite of heavy enemy fire, the mine-laying teams continued to work. When 15 German tanks led an attack on the area between the heights, the mine-laying section in reserve moved to mine the threatened area. The tanks observed the mine-laying and changed their course when they were about 200 yards away. This slowing down and turning of the tanks permitted the Red Army antitank gunners to knock out three of the tanks, and a fourth was destroyed by one of the electrically-controlled mines. Many infantry attackers were killed by the electrically-controlled mines, and the attack was repulsed.

Yet another example is the action which illustrates the advantage of laying mines quickly and what the cost of delay may be. In this case, the Soviet objective was a well fortified height. The first assault carried the



A typical Russian antipersonnel mine is the PMK 1940 cardboard mine (above). The top has been removed and placed to the right of the mine proper. The actuating lever is seen in the center of the mine. When the top is in place and the mine is stepped on, the lever is depressed, thus detonating the explosive. The PMS-40 (below) is a common type of Russian antitank-antipersonnel mine. In this picture, the detonator is missing from the well in the mine's center.



Russians high up the slope, but a German counterattack drove them back to their original positions.

The Russians then moved to a new, intermediate, assault line, with the mine-laying teams going along with the infantry and laying hasty minefields to protect the new line of departure. The Germans launched a series of infantry and tank assaults on the area, all of which were beaten off by the Russians. The Germans lost three tanks in the newly-laid fields.

Then the Russians launched a new effort to take the position. They drove to the crest and took the entire slope. This time the Russians had their mine-laying teams with the second echelon and, previous to the assault, removed some of the minefields they had laid, in order to permit their troops to maneuver more freely.

The Germans, as they usually did, immediately started a large tank attack on the flank. The tanks moved in over the very area from which the mines had just been removed. There was insufficient time to bring up the mine-laying teams from the second echelon, and the Russians were forced to withdraw.

The Soviet troops then prepared for another assault. This time they put their mine-laying teams with the first echelon of attack, and placed protective minefields along the flanks of the initial position. They did not remove the mines this time, as they had on the previous attempt.

Again they drove the Germans from the hill. The mine-laying teams began at once to lay fields across probable routes of approach. The Germans began the inevitable counterattack, but this time the tanks ran into mines and two were destroyed. The remaining tanks maneuvered to bypass the mines, but the engineer troops continued to lay mines in their path. While they milled around, trying to avoid the mines, the tanks were easy marks for the antitank weapons of the Russians, and the Germans lost more tanks.

The tanks had to withdraw and the German infantry was unable to carry the hill without their support. The Russians continued to lay mines during the night, both antipersonnel and antitank types. The following day the Germans tried again, losing more tanks and without any gain.

In short, the Red Army heartily believes in keeping mine-laying personnel forward with their attacking infantry and tanks. These troops, usually engineer personnel, begin to lay protective belts of mines immediately after the infantry occupies an enemy position. They continue to lay mines until the protective belt is complete, even if this must be done under heavy enemy fire.

This provides barriers and defensive assistance during the initial and critical period when defensive fire-plans are incomplete, and the danger of losing a position through enemy counterattack is greater than it will be at later period when defensive fires have been coordinated and better prepared.



AMT VI D4

A Story of Nazi Espionage in South America

At the end of World War I, the German intelligence services which then existed were, to all appearances, completely destroyed. But by the beginning of World War II the German intelligence system had been rebuilt so well that its extensive organizations reached their fingers into every part of the world. Not the least important among the organizations comprising the rejuvenated intelligence service was the *Sicherheitsdienst* (Security Service) or SD, which was initially brought into being to protect the Nazi Party.

Through the machinations of its officers, and the very active support of the Nazi Party, the SD extended itself outside the borders of the German Reich. Gradually it gained more and more influence within the Nazi State and, eventually, the SD took over many of the activities of the other German intelligence services, such as the *Abwehr*, the intelligence system of the German Army. The *Abwehr* continued to operate, but its position was gradually subordinated to that of the SD until the *Abwehr* finally came under complete Nazi Party domination.

The SD, through a merger with the Secret State Police (Gestapo) and the Criminal Police (Kripo), became the Reich Central Security Department (*Reichssicherheitshauptamt*) or RSHA. The RSHA was divided into seven sections (*Amter*), each of which was charged with specific duties. Each section was further divided into sub-sections, which were established on geographical or functional lines, and given letter designations.

Amt VI (Section VI) was the section concerned with foreign political intelligence. Sub-section *D 4* was the South American Branch—the whole South American set up being known in German headquarters as *Amt VI D 4*.

OPERATIONS IN SOUTH AMERICA

With the headquarters in Buenos Aires, *Amt VI D 4* conducted in Latin America all of the espionage activities of *Amt VI*. The principal function of *Amt VI* was, of course, secret political intelligence. *Amt VI* missions going to any country were given the following tasks: give the German Government all information necessary to exploit the political situation in any given country; recruit informers in the administration, industry, peasantry, corporations, youth, police, and all classes of society; recruit agents, whose mission would be the eventual elimination of political and military institutions which would oppose the Germans in occupied countries; encourage and foster all organizations, official and unofficial, outside Germany which have as their policy the advancement of Nazi ideology.

The *Amt VI* officer usually had some small, somewhat insignificant, "cover" position to disguise his real activities. Sometimes this cover position was a minor post at the German Embassy or Consulate, designed to keep the agent in the background of diplomatic activities. Often the position was that of an employee of a German business firm, or the agent held some position such as a pilot on one of the German dominated South American airlines. It was the type position that had little in the way of duties, thus leaving the majority of the agent's time free for intelligence activity.

The *Amt VI* informer, as distinguished from the directing officer, was not, generally, a trained intelligence agent. He usually was the person who was attracted to the *Amt VI* organization through patriotism or the lure of financial gain. Employees of German business firms were often informers for the *Amt VI* and other German intelligence agencies. So much so was this true, that to be an employee of one very large German firm with branches and subsidiaries all over the world was to be suspect as an agent.

Amt VI succeeded, before the end of the war, in operating *Amt VI* organizations in every capital in Europe, and throughout Latin America.

Amt VI D 4 was directed by a man who first appeared on the Latin American scene in 1937. His "cover" position was that of a business man working for an established firm.

Communication with Berlin was at first carried on through normal channels. Diplomatic couriers were used until, for various reasons, this became impracticable. In some cases, *Amt VI* agents worked independently of the German embassies and consulates. Many other means of transmitting information were used. Seamen on neutral ships, mostly Spanish, became couriers. Individuals in Spain and Portugal were used as "post boxes," and reports were then forwarded through established channels to Berlin. In one instance, a priest was used as a courier. Information which was considered of an urgent nature was sent to Berlin by clandestine radio transmitters. Quite a large net of these transmitters were estab-

lished in South America, nine of them in Argentina. Some of the transmitters were brought from Germany in diplomatic pouch.

Funds were provided through German embassies. Later it became more difficult to obtain money from this source, and German firms in the locality were called upon to help out. Local Nazi institutions were also required to provide money. When diplomatic relations were broken off between Germany and the country in question, large sums of money were left in the care of the "stay behind" agents and additional sums were sometimes smuggled into the countries for espionage use.

THE AGENT

Activities of the *Amt VI D 4* may be illustrated by tracing the career of one of its agents. An actual character on the scene, we can call him by a very common German name of Jacob Schmidt. That, of course, is not his real name.

Schmidt was not a colorful man. He had been born in Prussia and had lived in Germany until 1930. That year he went to Spain and worked in a bank at Barcelona. Later he was employed by a travel agency in a minor position. In 1934 he applied for and received a job as a delegate in Barcelona of a German railroad travel organization.

The Spanish Civil War forced Schmidt to return to Germany, but in November 1936 he was appointed representative of the "Central European Travel Agency" at a South American office.

Upon the outbreak of World War II, Schmidt, who wished to do something for his native country, contacted the Germany Embassy and asked about returning to Germany. He was told that he couldn't and that he could serve his country just as well where he was. He was asked to engage himself in collecting information about the military efforts of England, movements of shipping, amount of manufacturing, and other pertinent war preparations of the Allies.

Schmidt was able to secure information from many sources, such as newspapers, magazines, and other publications, and from less open sources. All the information which he obtained he passed on to the Embassy, knowing that it would be relayed to Germany.

He continued this sort of activity until September 1942, when his contact man at the Embassy was recalled to Germany. Before leaving, the contact man told Schmidt to continue his activities and to send information directly to Berlin if possible. If unable to send his information directly to Germany, he was to send it to Spain to be delivered to the German Consulate there. The contact man left Schmidt \$12,000 for this purpose.

Through another contact man, not connected with the German Embassy, Schmidt was able to make arrangements for getting his information to Spain. He met other persons who were able to get information through. For the most part, these were seamen and officers aboard Spanish ships who were



Schmidt was able to secure information from many sources, such as newspapers, magazines, and other publications, and from less open sources.

paid by the German Consulate in Spain. Schmidt faithfully sent reports every two weeks, in unaddressed envelopes.

In October 1942, Schmidt received orders from Germany to contact a man who was in charge of German espionage in another portion of Latin America. This man was a bank employee. Schmidt secured false identification papers which permitted him to travel without difficulty and visited the other agent. There he received quite a deal of information which he immediately relayed to Germany. Some information came from a South American army officer.

During his career of espionage, Schmidt was contacted by many people, both German and natives of the area. Some of these people were working for Germany in much the same manner as Schmidt. He met, for instance, two of the higher ranking German espionage agents in South America. One of these, the head of *Amt VI D 4*, took Schmidt, in 1943, to a farm house on the coast where a short-wave radio transmitter was concealed in an innocent looking hencoop. The radio was operated by the caretaker of the property who spoke fluent German, although he was not a German.

Among other things, Schmidt was asked to investigate and submit data as to where would be an ideal place along the coast to land additional agents by submarine. This he did, submitting photographs and recommendations. It is not definitely known whether or not his recommendations were ever put to use.

In February 1944, following a break in diplomatic relations between Germany and the country in which he was at the time, Schmidt and a large group of other Nazi agents were arrested and jailed. At the end of the war, he was still in jail and may eventually be tried as a war criminal.

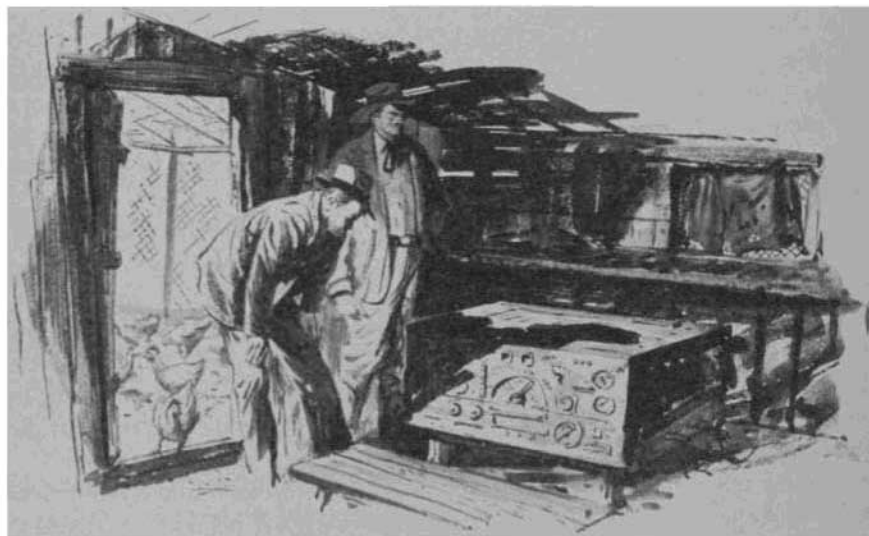
POSTWAR POSSIBILITIES

In order to operate efficiently, intelligence agencies must have a central control. If central control is absent, each component part of the intelligence organization becomes a small self-contained intelligence agency, but the over-all effectiveness of the system is lost.

The central control for the German intelligence organization has been destroyed. Prior to the ending of the war, some attempts were made to organize underground operations that would operate after the fall of Germany. There is evidence that rather large sums of money were sent out of Germany to finance postwar continuance of intelligence operations. The sudden collapse of Germany, however, prevented this elaborate plan from being implemented.

The rise of the German intelligence system from destruction at the end of World War I to the far-flung organizations that operated during World War II is ample evidence that intelligence activities are not easily erased.

Outside Germany, today, there are still groups of Germans who still hold firmly to Nazi ideology. There are many German firms that are still doing business in neutral countries, including the countries of South America. It is possible that such people as these may be spurred by dreams of a resurgence of the Nazi ideology, and may attempt to re-establish intelligence



A short-wave radio transmitter was concealed in an innocent-looking hencoop. The radio was operated by the caretaker of the property who spoke fluent German, although he was not a German.

organizations toward the day of their hoped-for-re-emergence of German power.

Such groups would quite probably make use of former intelligence agents and organizations—especially those that have remained undetected. This group would include business men in foreign countries, German organizations, scientists, and others whose position or knowledge would make them ideal prospects for clandestine activities.

Thus, even though Adolf Hitler's Germany has been destroyed, the future security of the United States requires that a careful watch be kept over the remnants of the *Reichssicherheitshauptamt*.



INCENDIARY RIFLE GRENADE

One of the more recent German grenades, developed but not placed into production, was an incendiary rifle grenade, intended for sabotage of American open-top oil and gasoline storage tanks. Although perfected, this grenade was not manufactured because the Germans "suspected that American oil and gasoline storage tanks would be blanketed with a non-combustible, and thus nullify the effect of the grenade."

The grenade has a shank made of wood and pre-rifled. In front of the wooden shank is a steel disk, to add weight. The body of the grenade is



filled with a thermite mixture and has a rounded hollow nose to permit the grenade to float nose up.

A fuze in the base ignites a slow match. This permits the grenade, in striking within an oil tank, to sink to the bottom. Then the slow match ignites a light charge of black powder which blows the shank and steel disk from the grenade and ignites the grenade at the same time. The light weight, once the steel disk is removed, allows the grenade to rise to the surface. Burning thermite is then scattered through holes in the hollow nose, to spread over the surface of the tank. The thermite filling burns from 30 to 60 seconds. The range is about 218 yards.



OBERLT. OSTER REPORTS...

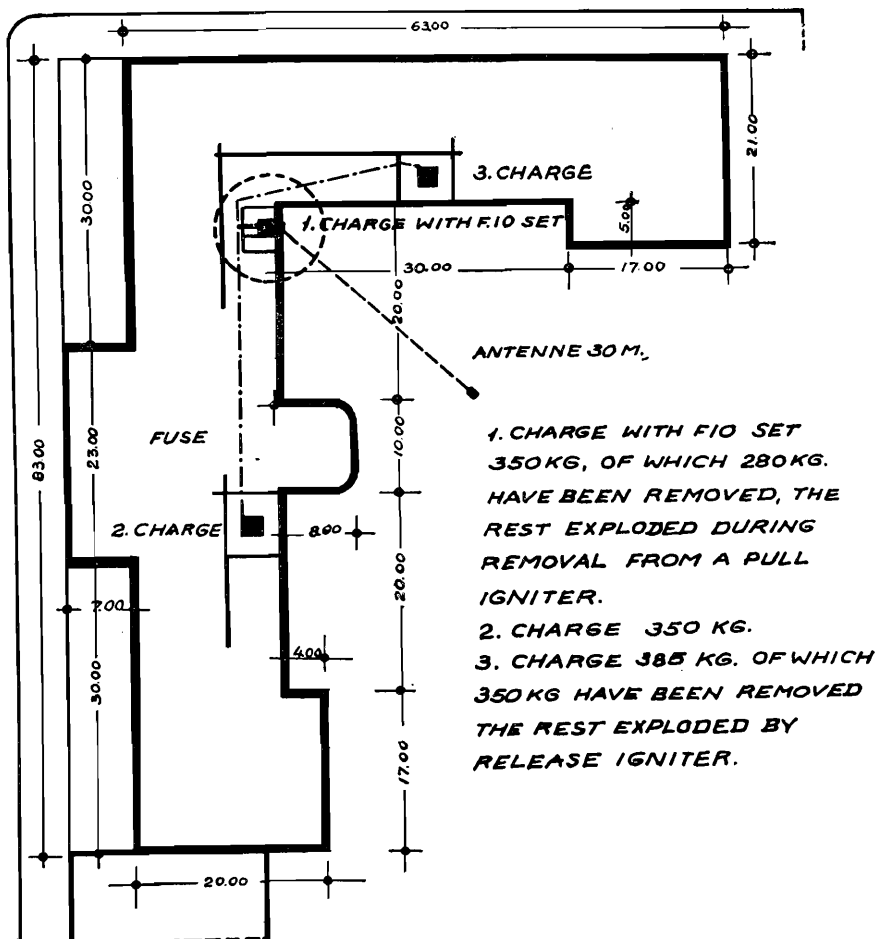
Always methodical, *Oberleutnant Oster*, in command of a German Army pioneer group charged with the removal of mines and booby traps from a small Russian village, listed among "losses" during the operation, "two pairs work gloves." He also listed 14 persons as killed while removing mines. The gloves and the lives were lost while disarming Russian mines equipped with a radio-signal-activated detonator, known as the F-10.

The Red Army has at least three types of fuzes which detonate their charge when radio signals, transmitted on a set frequency, are received over an antenna buried with the mine. All types are somewhat similar, and a description of the operation of one type, the F-10, will generally illustrate the operation of the other types.

The F-10 Radio Mine Igniter consists of a receiver, battery, connecting cable, antenna, three ignition cables, and a waterproof bag.

The receiver unit contains a time clock mechanism which turns the receiver on and off at set intervals, thus preserving the life of the battery. When the set is turned on for periods of 12 to 15 seconds at intervals of 2.5 minutes, the set will operate for a 20-day period. When a 5-minute interval is used, the set is good for 60 days. There is also incorporated a delay mechanism so that the set may not be activated until after a period as long as 35 days, thus making the mine operative over a period longer than 60 days after it has been emplaced. Another feature is that the clock automatically rewinds itself when it becomes nearly run down.

Two types of antenna are used. One is a spiral type which winds around the set itself. The other, said to be more efficient, is a straight



F-10 with charges, placed in a building on the corner of Red Army and Voroshilov Streets in Krasnodar. Dimensions are in meters (a meter is 3.28 feet), weights in kilograms (1 kilogram is 2.2 pounds)

antenna, sometimes as long as 100 meters. Both are buried under earth. When the straight antenna is used, it is buried in the direction of the igniting transmitter.

Signals to ignite the F-10 are transmitted from standard army or commercial type transmitters. A three tone signal is sent at standard periods. When it is desired to ignite the mine, the signal is sent for periods of from 1- to 10-minute duration, depending upon the manner in which the receiver is set. This ensures the signal being received by the set when it is in operation during the clock-regulated period.

Three tones are needed to actuate a "tuning fork" arrangement within the receiver. Three prongs on this attachment operate the firing relay. Each prong has a definite job and does its portion when the appropriate

tone is received. The tones must be in correct order or the set will not work. The frequency on which the signal is transmitted is set on the F-10 when the mine is laid. A wide range of frequencies may be used.

The F-10 will receive signals sent from ranges as close as 2 miles or as distant as 450 miles, when standard army transmitters are used. Some commercial type transmitters will ignite the mine at greater distances.

When the set is buried, it is enclosed in a waterproof bag. One or several charges may be ignited by the same F-10 Radio Mine Igniter. The igniter may be booby trapped with standard type igniters to make its removal and disarming more difficult.

As a defense against detonation of the mines, the Germans have used extensive "jamming" operations, using monitors to pick up the frequencies upon which signals are being sent, and then transmitting jamming signals over the same frequency. As Lt. Oster reported to his superiors, that has not been "too effective." Such a system requires a great number of monitoring sets and a fairly large number of jamming transmitters.

Varied types of detectors may be used to discover the mines. One type of mine listening set picks up the sound of the clock mechanism. Another type picks up the varying magnetic field of the operating relay.

That this type mine is effective and deadly is indicated by the factual language of Lt. Oster's report, in which he says "reinforcement troops and civilians had a mine-psychosis." Lt. Oster also says in this report, "The removal of radio mines calls for conscientiousness of the men and greatest efficiency and courage. It is a matter of a treacherous efficient weapon. . . ."

He further said, "pioneer detecting squads employed to remove mines have to be considered as combat personnel and should be appreciated as such."

And, don't forget—they lost two pairs of work gloves.



JAPANESE INTELLIGENCE METHODS

The conclusion of World War II, and the occupation of Japan, has brought an end to one of the most obscurely known intelligence organizations in modern history. Perhaps the full story of the Japanese intelligence system will never be told. This article, however, outlines some of the operating methods of the Japanese undercover intelligence agencies. Part 1—The Intelligence Organization of Japan—which outlined the organization of the Japanese intelligence system, appeared in the March issue of the *Intelligence Bulletin*

Part 2

Undercover Intelligence

Intelligence, generally, can be divided into the fields of undercover intelligence and combat intelligence. Undercover intelligence may be defined as all information acquired by organized spies, military missions and attaches, commercial personnel in foreign countries, and all other secret or surreptitious means of acquiring information. Combat intelligence, on the other hand, usually is regarded as information about an enemy collected in the field during operations. Although undercover and combat intelligence methods at times may overlap, generally the two activities are widely divergent.

Although any Japanese could have been called upon to engage in espionage, the bulk of Japanese undercover intelligence activity was performed by persons trained or employed for that specific purpose. Such people included individuals ranging from organized spies and diplomatic personnel (including military attaches and missions) to such non-professionals as fifth columnists and natives. The Japanese had a number of organizations for directing their espionage efforts in wartime. The more important ones are discussed here.

SPECIAL SERVICE ORGANIZATION

The main Japanese agency for collecting military information and converting it to intelligence was the Special Service Organization, known as the *Tokumu Kikan*. It was an undercover agency which employed both military

and civilian personnel at home and in foreign countries. In its mission, the *Tokumu Kikan* may be considered as the Japanese counterpart of the Espionage Branch of the German Joint Intelligence Service of the Armed Forces High Command. Here the similarity ceases, however, as the *Tokumu Kikan* was entirely an army organization of great independence and authority.

The Special Service Organization appears to have been organized in the Kwantung Army several years before the Manchurian Incident of 1931, and was used to lay the ground work for the military operations in that country. Since then, each Japanese campaign was preceded by the undercover work of the Special Service Organization. During the active military portion of the campaign, some members of the organization were assigned to the Army for direct combat intelligence work, while others continued to provide information in their undercover capacities. Once the Japanese had overrun the area with which the particular operation was concerned, the members of the Special Service Organization assumed official status and took over or aided in the control of the conquered population.

Apparently the organization's original mission was to assist other Army intelligence agencies in collecting information needed by the planning staff prior to, and during, military operations. In time, however, this assistance changed, in Asia at least, to more or less complete control of the bulk of Army intelligence activities.

For each major operation, the Special Service Organization apparently created a special team, the head of which was the individual best qualified for the appointment. He might have been an Army or Navy officer, an official of the foreign service, or a member of the Military Police. All Japanese diplomats, military attaches, goodwill representatives, students, tourists, and technical experts who visited the area in question were assigned missions, the sum total of which presumably provided all the information required.

Usually the information needed was obtained by more agents than were necessary, and often the items required were in greater detail than was significant. The excessive mass of material thus collected necessitated much filtering and collation. Nevertheless, granted enough time, the information was obtained and the intelligence derived from it was relatively sound, especially on the tactical rather than the strategic level of the operation.

In the early days of the Special Service Organization, Army and Navy officers were sent to the key cities of China, Burma, India, and the Netherland East Indies. They established branches of the organization in advance of the military operations eventually undertaken in those areas. These main branches, in turn, sent out small nuclei throughout their respective territories so that the entire area, from the Pacific islands to the Malay States and India, was covered by a net of the Special Service Organization. The long tenure of these branches in specific areas enabled them not only to fulfill their espionage functions, but to assist the invad-

ing Japanese troops by direct actions when the time came. Then, too, Special Service Organization officials were able to advise on methods to be used in governing the regions when they were taken over by the Army and Navy.

When the first members of the Special Service Organization arrived in a new area, their initial problem was to establish themselves among the native population. While this may have been done by giving the agents an official status different from their actual mission, members of the Special Service Organization generally were attached to industrial companies, banks, or shipping firms. From these positions, they had easy access to much of the political and economic intelligence that they had to obtain, and they were able to set up and operate the requisite espionage system for collecting information about the strength and capabilities of the military forces in question.

Often, the Japanese agents themselves could not do the spying necessary to procure the information they needed; and they therefore were compelled to use natives or foreigners for this work. This necessitated the collaboration of a number of non-Japanese personnel, obtained by persuasion or coercion. In the early stages of the Special Service Organization operations, in any given area, these agents probably were trained by actual performance of their duties, or by observing the methods of agents already trained in other areas.

When active military operations were imminent, the emphasis of the Special Service Organization operatives was shifted from long-range intelligence to the immediate problems of the prospective campaign. If the opening of the operations requires a landing on a hostile shore, plans were made for such activities as the marking of landing beaches, diversion of defending troops to points removed from the proposed landing sites by false orders or feints in force, and the stampeding of the native population to interfere with the movement of reinforcements and supplies. In several cases in China the Special Service Organization had infiltrated large numbers of agents into key objectives, such as walled towns. Before the military forces had reached the city, these agents had thrown off their disguises and overpowered the Chinese defenders. Such extremes of violent action are not the usual procedure, but were always potential capabilities of the Special Service Organization.

When military operations started in an area, it appears that the Special Service Organization came immediately under the orders of the senior Army commander in the region. After the Army commander had assumed control, the larger part of the Special Service Organization usually continued to operate in advance of the Army, while a fraction was held for use in the combat zone. The majority of this latter group was attached to the intelligence sections of the various army echelons. The remainder of the Special Service Organization in the combat zone was attached to the task force headquarters, and was used for customary undercover work and for

the control of the civilian population. Apparently, the task force commander, or his chief of staff, decided what portions of the Special Service Organization would be assigned to various missions, and in general directed the operations of the organization in his area.

When a conquered area was placed under garrison regulations, the Special Service Organization ceased to operate with the secrecy required in enemy territory or in the combat zone. At this stage, the main function of the organization was control of the civilian populace.

MILITARY POLICE

In the Japanese Empire, the Military Police (*Kempei*) played an important role in the intelligence system. Primarily a counterintelligence agency, the *Kempei* was a semi-independent branch of the Army, administered by the Military Affairs Bureau of the War Ministry. Although routine police work in the military establishment was one of its functions, the principal mission of the *Kempei* was very similar to that of our own Counter Intelligence Corps.

The personnel of the *Kempei* were drawn mainly from the Army. Qualifications for assignment to this branch were high, and training was rigid, including all phases of detective work plus some law and languages. Actually, the *Kempei* was divided into two classifications—Field Military Police and Regular Military Police, and each had its corps of auxiliaries. Although the missions of the two types of Military Police often overlapped, Field Military Police were generally involved with plain-clothes counterintelligence work in areas in advance of the Army, while Regular Military Police were confined mostly to uniformed duty in occupied areas under Army garrison regulations.

Although the main function of the Military Police was counterintelligence, in many areas of operation they engaged in some espionage, working alongside the Special Service Organizations. Military Police sometimes were made responsible for organizing espionage nets in and behind enemy lines. Prior to military operations, these espionage functions were conducted under cover by Field Military Police and their auxiliaries, native agents of the Special Service Organization or, less frequently, native agents. During the operations, these same personnel continued their work until such time as the region came under garrison regulations when the Regular Military Police took over. During their espionage activities, personnel of the Military Police often wore the normal civilian dress of the local population.

In all areas, the powers of the Military Police were greater than those of the civilian police. Similarly, the Field Military Police had more authority than the regular members of the organization. The main duties of all Military Police in any part of the Empire were the surveillance of military discipline, the enforcement of security, the protection of vital military zones, the execution of conscription laws, the detection and arrest of fifth columnists, and the suppression of subversive rumors. Normal

police duties such as traffic control, the guarding of essential installations, and routine inspections were occasionally carried out by the *Kempei*, but usually line-troops were used, since the Military Police were not primarily a routine guard unit.

In combat and occupied areas, certain duties other than espionage and counterintelligence have been assigned to the *Kempei*. Here they were responsible for the requisitioning of native foods and supplies, and the maintenance of order among civilians.

The Military Police exercised control over civil populations and foreign residents only so far as actual policing was concerned. Liaison between the population and the Japanese forces in all other matters was a function of the Special Service Organization or local Army headquarters (usually the Line-of-Communications Headquarters), although the *Kempei* was often consulted. This police control included the investigation of political sympathies, individual character and loyalty, suspicious acts or occurrences, subversive activities, and the censorship of mail. The Military Police were assisted by their Japanese civilian employees, native agents, and the intelligence personnel of other organizations. Dossiers were kept of all suspected persons, and reports were submitted through channels to Military Police headquarters. Liaison was maintained with the Line-of-Communications Headquarters and with the Special Service Organization so that the reliability of prospective local collaborators could be thoroughly checked. The Military Police also issued travel permits, investigated complaints concerning the behavior of military personnel, distributed salt and rice to the native population, and aided in the relief of distressed persons.

Considerable use was made of Neighborhood Associations by the *Kempei* detachments. These Neighborhood Associations were the basis of the Japanese system of civilian control and law enforcement throughout the occupied territories. The associations, organized for each town or village, were comprised of groups of people, usually those occupying 25 houses, each group with a leader. It was the responsibility of each leader to see that a watchman was posted from his group between sunset and sunrise. Such watchmen were armed, and had to check obedience to the curfew law and the identity cards of unknown persons. Group members were required to spy upon each other and to report to their leaders anything suspicious, such as the presence of strangers in their group. Through this system, the Japanese were able to provide themselves with a mine of information and an excellent means of controlling civilian populations.

In Burma, and presumably in other occupied countries, the Japanese were reported to have organized squads, mainly Military Police, to remain behind in territory evacuated by their armies in order to conduct underground operations against the Allies. The Military Police units allegedly were to hinder Allied operations and prevent or discourage cooperation of natives with our armed forces. Included in their duties were sabotage, assassination, collection of information, terrorization of civilians, and sur-

prise attacks on key installations. So far in Burma, however, if such units have been left behind in this area as reported, their effect has been negligible.

SPECIAL SERVICE DEPARTMENT (NAVY)

The Special Service Department (*Tokumu Bu*) was the naval counterpart of the Army Special Service Organization. It worked in close liaison with the Army organization, and much intelligence for military operations was secured.

The greatest effort of the Special Service Department appears to have been made in China. The field agents used were almost all Chinese, chosen from all classes for their general intelligence, knowledge of the country, contacts, and trustworthiness. These agents usually infiltrated into Free China disguised as merchants. A few Russian refugees, and possibly other Europeans, were employed as agents by the Japanese, but not in high grade intelligence work.

In the South Seas area, the Japanese also maintained a Special Service Department, early history of which probably was less active than that of the department in China. Prior to the outbreak of hostilities in December of 1941, however, the Special Service Department in the Pacific area was engaged in detailed espionage activities regarding the naval capabilities of the American, British, and Dutch forces in the Far East. One of the main centers of espionage was located in Soerabaya, Java, and this unit continued to be prominent in the operations of the Special Service Department in the Southern Area.

DIPLOMATIC AND CONSULAR SERVICE

Japanese diplomatic and consular services were less important in the espionage system in wartime than they were in peacetime. Before the war, the personnel of the diplomatic corps formed the "eyes and ears" of the Japanese intelligence system, for they were accepted in areas in which the Army and Navy could penetrate only with difficulty, if at all. When hostilities started, the Japanese were denied diplomatic representation in most countries outside Asia, but did retain diplomatic relations with neutral governments, and with puppet governments that they set up in occupied territories. In these occupied countries, the consular service at first continued its espionage independently. But these activities were somewhat limited because of the large number of consular personnel absorbed by the Special Service Organization. Later the consular service appears to have operated in much closer liaison with the other intelligence agencies.

The first contact of the diplomatic and consular services with the problems of wartime intelligence occurred in China. In the early days of fighting in that country, the Army Intelligence Organization, the Special Service Organization, the Special Service Department, and the Military Police each set up an independent intelligence system. The result was four organizations

working in almost watertight compartments, almost without liaison and with a great deal of inevitable duplication.

When this state of affairs was discovered, the urgent need of renewed co-ordination was realized. Agreements were reached whereby each operational area was placed under the control of one of the four intelligence agencies. All information obtained by any agency in the area was transmitted to a controlling department. This department then collated and disseminated the information.

FIFTH COLUMNISTS

The Japanese have used fifth columnists in nearly every territory they have occupied. This undercover "army" was made up of natives who had been bought over, and of Japanese who had been living for some time in the areas in question. This latter class usually consisted of small shopkeepers (barbers, grocers, photographers, etc.) who to casual observers appeared to be normal, peace-loving settlers. The work of the fifth columnists was usually controlled by a specialist from one or other of the Japanese intelligence organizations.

The Japanese concept of fifth-column activity did not differ from that of other powers. The methods they adopted to achieve their aims in this sphere of intelligence, however, were characterized by more ruthlessness than would be employed by most other nations. Terrorism, disturbances, arson, and demolition were regarded as normal tasks for such agents.

The importance attached to fifth-column activity by the Japanese is shown in the plan which was to be operative on Luzon. Prior to the anticipated American attack, fifth columnists were instructed to recruit informers who could negotiate with police and governmental officers to ensure their cooperation in anti-American activities. Pro-American elements were to be killed, and every effort was to be made to frustrate the operation of anti-Japanese guerrillas. Important individuals whose loyalty to the Japanese was suspected, were to be assassinated, after which rumors would be circulated blaming the deeds on innocent persons thus producing maximum dissension. Incendiarism, especially in the poorer districts, was to be utilized as a terroristic measure to discourage cooperation with the Allies, and American sympathizers were to be robbed by fifth columnists posing as anti-Japanese guerrillas. Aside from these violent measures, propaganda and rumors were to be circulated indefatigably to produce as much confusion as possible among elements likely to be largely in favor of the Allied cause.

SELECTION AND TRAINING OF PERSONNEL

Although the personnel of the Japanese intelligence system was drawn from almost any walk of life, the majority of the key positions in the military intelligence organization were held by Army officers or other individuals of service or governmental experience. Military attaches usually,

though not always, were graduates of the Army General Staff College and members of the General Staff Corps of the Army. Generally, they seemed to have only the minimum linguistic accomplishments for their posts, but perhaps they were better equipped in this respect than they appeared to be. Special courses in appropriate languages were provided for officers of all categories who were serving abroad. Many other officers were detailed to major countries to study the language.

Technical officers serving outside Japan were chosen from government school units which were carrying out tests and research in their particular fields. Those selected must have volunteered to serve in a specific area. Similar conditions probably controlled the selection and training of naval personnel stationed abroad, while members of the consular and diplomatic corps undoubtedly were governed by a comparable system.

Probably the Japanese made less use of foreign clerical help than does any other government, mainly because of the difficulty of obtaining non-nationals who can speak Japanese. In non-Asiatic countries, some agents were recruited from the civil population, as it was difficult for a Japanese to mingle with Europeans or Americans without exciting suspicion. In the Orient, however, Chinese and other Asiatics were widely employed as agents, but not in positions of great responsibility. These agents were given varying amounts of training locally, or no training at all, depending on the area in which they functioned. Many of them were employed solely to spy on other local operatives. The Japanese established definite qualifications for the best type of foreign agent, and these standards appear to have been carefully followed in choosing and utilizing local operatives for espionage.

Key officials of the Special Service Organization apparently were trained in the Intelligence Section of the Kwantung Army in Manchuria. Other Special Service Organization officer personnel were trained at the *Tokumu Kikan* School in Tokyo. Subordinate officials and administrative personnel of the Special Service Organization were usually Japanese, and probably were trained mainly in Japan, although some instruction may have been received in the field. Many Special Service Organization personnel had official diplomatic or military positions in addition to their role in the *Tokumu Kikan*.

METHODS OF COLLECTING INTELLIGENCE

The Japanese may be assumed to have used every means of espionage known to the professional agent. They were equally careful to exploit to the full all official and open channels for the acquisition of useful publications and technical equipment. Undoubtedly, the Japanese government has obtained every published map or document that could be purchased by legitimate means. Much equipment has been bought in the open market, and then either copied or redesigned to suit Japanese needs.

As a supplement to legal acquisition, the Japs used military missions to a

greater extent than do most governments. Between 1922 and 1939, at least ten such missions visited the United States. They were all well staffed, and saw much of the U. S. Army and American industry. The technical inspectors of the Army and Navy, who had offices in New York prior to 1941, made many detailed inspections of industrial and ordnance plants. These inspectors were the heads of technical espionage in at least the northeastern portion of the country. Officially, the Japs would not exchange much information with any other government; even the Germans were not very successful in getting information from them. Controlled undercover exchange of information was used to a limited extent. The social contacts of Japanese officials in foreign countries probably were never worthwhile sources of information, for at social functions the Japs seldom talked about serious things, and continuously attempt to play the "good fellow." They did not seem to consider it wrong to be drunk in public or private while on attache duty.

Japanese military attaches in a given area held regular conferences for exchanging information, and probably for receipt of instructions. These conferences were held in Europe as late as January, 1944. Liaison meetings by the technical inspectors also appear to have been planned, if not actually held, in America and Europe. These last liaison meetings were to be kept secret, as were the missions of observers attending from other districts. Japanese Military Attaches and inspecting officers usually served abroad for a shorter time than do comparable officers of other armies. However, these Japanese usually had training in the country to which they were accredited, and were aided by their connections with, or their control of, the rather elaborate Japanese espionage system.

A common intelligence practice used by the Japanese was the interrogation of civilian Japanese while they were traveling abroad and after their return to Japan. Occasional subversion of foreigners, other than Orientals, has been definitely proved, and it is likely that this encouraging of subversive activity was carried out with greater success than is known. But this activity does not seem to have been a prime source of Japanese intelligence outside of Asia, where subversion of Orientals reached staggering proportions!

In the Orient, Japanese agents were planted in many important and vulnerable places in nearly every country. Outside of Asia, the difference in physical appearance of Japanese compared with the rest of the civil population made this difficult.

In Asia in particular, the Japanese made wholesale use of plain-clothes agents. Whereas some of these spies may have been highly trained operatives of the Japanese intelligence organization, the large majority of the plain-clothes men were either Chinese loyal to the puppet government or ordinary Japanese soldiers disguised as local civilians. Depending upon the professional capacity of the individuals, the missions of these agents may have varied from high class espionage to crude guerrilla warfare. It was not unusual for many plain-clothes men, usually Japanese soldiers, to

operate in groups within free China. Typical missions of such a group were assassination, the disruption of communications, and the destruction of military supplies and equipment. Sabotage was a specialty of this type of agent. By operating in groups before an advancing Japanese army, these plainclothes agents have at times been an effective fifth column.

Violent methods of obtaining information have been common practice in Japanese territory and in countries adjacent to Japan. Yet violence against European or American nationals, within the bounds of their homelands, appears to have been relatively rare. A considerable use was made of women as agents, or as decoys to lure intended victims of kidnapping or murder within range of the agents concerned. Such women were carefully trained; many of them, if not the majority, were Japanese who were trained in Japan.

TRANSMISSION OF INFORMATION

The Japanese system of getting information to Japan, although quite well developed, was rather complicated. The short tour of foreign duty of Japanese diplomatic, consular, and military officials enabled them to make relatively frequent personal reports to the government agencies for which they worked. The conferences of the military attaches, and of other classes of officials already mentioned, were supplemented by a great amount of travel in the country to which they were accredited, as well as in neighboring countries. This travel not only provided opportunities for observation and consultation, but also for contacting agents in outlying areas. Language and other student officers, and officers resident abroad on official missions, probably were used extensively as couriers, and the numbers available for this work were larger than in other countries.

The captains of ships in the Japanese merchant marine were frequently used as couriers, as well as civilians or officers on official missions in foreign countries. In the Netherlands East Indies and the Mandated Islands, the courier system is known to have operated on a definite schedule and with permanently assigned personnel. There is no reason to suppose that such a system was not worldwide in scope.

SECURITY CONTROL

The Japanese maintained very strict control over the dissemination of vital intelligence. Topographic maps were published with areas of military importance left blank, and printed documents were carefully classified. The nature of their language reduced security problems for the Japanese, but they did not rely on this to prevent the leakage of information. On the lower levels of intelligence operations, there was a great deal of rather obvious checking and supervision of paid agents, particularly when those agents were not Japanese. Above those levels, the picture is not so clear, but it seems that there was less checking than in the German or Russian systems.

Secret documents of the Army were classified as (1) Army Military—Top Secret, (2) Army Military—Very Secret, (3) Army Military—Secret. There did not seem to be any standard for determining which classification would be used on a specific document. Included in the various classes of secret documents were those that dealt with such necessarily secret items as operations, the handling of troops, wartime organization, mobilization, and codes. Personnel documents could be classified as (1) Very Secret—Officer handling, (2) Very Secret, (3) Confidential, (4) Restricted. Naval security classifications varied somewhat from those of the Army.

Personnel in the Army intelligence service were rotated within relatively short periods; the average term of a Japanese Military Attache being not over two or three years. Usually Japanese intelligence personnel who lived abroad would entertain on a fairly large scale. This was true principally in countries in which they were interested. Marriage with foreigners was not common, but has taken place, and there appears to have been no official regulation against it. Foreign-born wives of Japanese officials have been known to engage actively in espionage activities for the Japanese.

Japanese military personnel abroad lived well, and were usually furnished cars by their government. Generally their rank was higher than the average of other attaches, and it appears to have been a permanent rank and not one to be held only for the duration of the assignment.

It was standard Japanese intelligence practice to limit foreigners to the positions of agents only; no instances are known of non-Japanese occupying positions of any responsibility. If such persons were given high-sounding titles, they were decorative only, and there were Japanese officials behind them who directed every move.

GERMAN AND JAPANESE METHODS COMPARED

In general, much of the similarity between German and Japanese intelligence activities may be attributed to the common totalitarian basis of both governments, rather than to like methods in the details of operation. Whereas the operating techniques of individual espionage agents may not vary much regardless of what government they are working for, the manner in which the agents are organized, trained, and employed may determine their over-all effectiveness. Such is the main distinction between the German and the Japanese undercover intelligence.

Unlike the Japanese, the late Nazi government concentrated control of military intelligence operations one echelon higher than did the Japanese. Under the German Armed Forces High Command—an organization comparable with the Japanese Imperial Headquarters—a Joint Intelligence Service was established. The responsibility and control exercised by the Joint Intelligence Service exceeded that of the Japanese Second Bureau. Combining as it did the intelligence functions of all the German Armed Forces, the Joint Intelligence Service likewise had direct control over all phases of intelligence activity. Consequently, the Joint Intelligence Service originally

included an administrative Central Branch, and four operating branches: Foreign Branch, Espionage Branch, Sabotage Branch, and Counterintelligence Branch.

The Foreign Branch controlled the activities of the military, naval, and air attaches nominated by the three service high commands. Thus this branch handled what in the Japanese system was the divided responsibility of the Military Affairs Bureau for the Army, and the Third Division of the Naval General Staff for the Navy.

The Espionage Branch carried out the duties of the Special Service Organization and the Special Service Department under the Japanese system.

No organization equivalent to the Sabotage Branch is known to have existed in the Japanese intelligence organization, for such duties under the Japanese system were generally local responsibility of the ranking regional intelligence office in the field.

The duties of the Counterintelligence Branch encompassed those of the *Kempei* under the Japanese system.

Thus the definite division between intelligence and counterintelligence operations which characterize the Japanese system, particularly on the higher levels, did not exist under the German system. The direction of both intelligence and counterintelligence (including the activities of attaches) by the German Joint Intelligence Service gave the Germans an advantage of centralized control which the Japanese did not possess. This over-all control by the Germans gave them a considerable advantage over the Japanese.

Similarly, the Joint Intelligence Service system of controlling and conducting undercover operations was standard throughout subordinate intelligence offices. Each of the *Wehrkreise* (military districts comparable to our Service Commands) had Joint Intelligence Service field offices at the *Wehrkreise* headquarters, and a Joint Intelligence Service office was attached to each unit of military administration in occupied countries. Every regional office of the Joint Intelligence Service, whether in Germany or abroad, had three main sections corresponding to the Espionage, Sabotage, and Counterintelligence Branches in Berlin. When compared to this tight local administration, the Japanese system seems inept.

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